Abstracts of the Association of Upper Gastrointestinal Surgeons of Great Britain and Ireland

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BJS Scientific Papers
New Dock Hall
Thursday 22 September 2016 (11:30 – 13:00)

A01

Prognostic value of metastatic lymph node ratio (LNR) following curative resection for ampullary adenocarcinoma: The Royal Marsden Experience
Fiammetta Soggiu1, Eleftheria Kalaitzaki2, Jeremy Nowell Thompson1, Aamir Zafar Khan1
1 Department of Surgery, Royal Marsden Hospital National Health Foundation Trust, London, UK, 2 Research & Development, Royal Marsden Hospital National Health Foundation Trust, London, UK

Background: The current nodal staging for ampullary adenocarcinoma (AAC) in the TNM system distinguishes node-negative (N0) and node-positive (N1) without taking into account the number and burden of involved metastatic lymph nodes (LN). Several studies suggested the prognostic value of the number of LN involved on survival and therefore proposed to incorporate a LN subtyping into the TNM system. The aim of this study was to evaluate the clinical significance of the burden of LN disease in a cohort of patients undergoing pancreatoduodenectomy for AAC from our institution.

Methods: One hundred patients who underwent pancreatoduodenectomy with extended lymphadenectomy for AAC from 1998–2015 at Royal Marsden Hospital were included in the analysis and categorized according to nodal status as node negative (N0) and node positive (N+). The N+ group was sub classified according to the number of nodes involved/nodes examined ratio (LNR) into 4 groups: group LNR0 with LNR classified according to the number of nodes involved/nodes examined ratio of $N_e \geq 0$; group LNR1 with LNR $<20$; group LNR2 with LNR between 20–39% and group LNR3 with LNR $\geq 40$. Clinico-pathological features were similar across all groups. The impact of N+ and LNR on overall (OS) and time to recurrence (TTR) was assessed.

Results: The median number of LN examined was 14 (9 – 18). LN metastasis was present in 62 cases (62%). Node involvement N+ was associated with decreased OS and TTR compared to N0: median OS 36 months (IQR 19n – 83m) vs. 91 months (IQR 55m – 109m), ($p = 0.007$) and median TTR 16 months (IQR 9m – 51m) vs. not reached (IQR 53 – NR), ($p<0.001$). Three-years OS was 85% (95% CI 67%-93%) in N0 and 49% (95%CI 35%-62%) in N+ whereas 3-years TTR was 78% (95% CI 60%-89%) in N0 and 33% (95% CI 21%-36%) in N+. When the N+ cohort was classified according to LNR, TTR HR was 2.8 (95% CI 1.2 – 6.6), 4.9 (95% CI 2.2 – 11.1) and 7.8 (3.2 – 19.1) ($p<0.001$) while OS HR was 2.8 (1.3 – 5.9), 2.8 (1.3 – 5.9) and 1.4 (0.5 – 3.8) ($p = 0.02$) for LNR1, LNR2 and LNR3 respectively.

Conclusion: In this study the Lymph Node Ratio appears to be a prognostic factor for TTR and OS in patients undergoing pancreatoduodenectomy for ampullary adenocarcinoma and underpins the requirement for adequate lymph node retrieval as part of this operation.

A02

Endoscopic vacuum therapy: a novel treatment option in oesophagogastric surgery
Dimitris Pournaras, Richard Hardwick, Peter Safranek, Vijay Sujendran, John Bennett, Graeme Macaulay, Andrew Hindmarsh
Cambridge Oesophagi-Gastric Centre, Addenbrooke’s Hospital, Cambridge, UK

Background: Perforations or defects in the continuity of the upper gastrointestinal tract often pose a challenge, particularly when surgical treatment has failed or is not possible. Vacuum therapy has revolutionised the treatment of wounds and its role in enabling and accelerating healing is now explored in oesophagogastric surgery.

Methods: The principle of negative-pressure wound therapy is replicated securing appropriately sized open-cell foam on the distal end of a nasogastric tube using a silk suture. Under general anaesthetic and after the initial endoscopic assessment of the defect/cavity the system is placed endoscopically in the desired position. Continuous negative pressure (125 mmHg) is then applied. Re-evaluation with change of the negative pressure system is performed every 48–72 hours depending on the clinical condition.

Results: Since April 2011 17 patients were treated with endoscopic vacuum therapy. In all of them surgical, radiological, other endoscopic options were considered but were deemed not feasible or performed without a successful outcome and therefore endoscopic negative pressure therapy was considered as a salvage option. The cause of the defect/cavity was mostly due to a postoperative complication, iatrogenic or spontaneous perforation. Fourteen patients completed treatment successfully with healing of the defect and/or resolution of the cavity with subsequent discharge. In three patients endoscopic vacuum therapy was discontinued leading to mortality in two patients. The median number of changes was 7 (1–12) and the median length of hospital stay was 32 days (23–152).

Conclusion: We present our initial experience with this novel method demonstrating that it is safe and effective when conventional surgical, radiological or other endoscopic therapy is not feasible or the risk associated is too high. Further clinical trials will establish the role of this technique in the treatment algorithm of perforations and postoperative complications in oesophagogastric surgery.
A03

Relationship between Major Trauma Centre Designation and mortality in patients with Severe Liver Injury (Grade IV and V)
Eyad Issa, Tina Gaarder, Pal Aksel, Adam Brooks
The East Midlands Major Trauma Centre, Nottingham, UK

Background: Regionalisation of major trauma in England in April 2012 re-directed severely injured patients to Major Trauma Centres (MTC) whereas less injured patients went to Trauma Units (TU). This has delivered an overall improvement in survival, however outcomes in specific injuries have not been evaluated. Severe liver trauma (Grade IV and V) is recognised to have high mortality although contemporary national outcome for patients in England with these injuries have not previously been reported. The aim of this study was to define the contemporary mortality associated with severe liver injury in England, as well as, to investigate the effect of the regionalisation of major trauma on outcome for patients with severe liver injuries.

Methods: Trauma Audit Research Network (TARN) data for patients, who presented between April 2010 and March 2015, were 16 years or older, alive on admission and had injury severity score (ISS) ≥ 15 and at least liver injury, were retrieved. Outcome (mortality) was compared before and after regionalisation and also between MTCs and TUs.

Results: A total of 1836 patients met the inclusion criteria. 432 patients had a liver injury of grade IV or above. The overall mortality for severe liver trauma in England since April 2012 is 22%, and this has improved significantly since regionalisation (22% vs 34%; P <0.05). Similarly, the outcome of trauma patients with severe liver injury in MTCs has improved since regionalisation (19% vs 32 %; P<0.05). Patients with severe liver injury admitted to TUs after April 2012 had higher mortality compared to those admitted to a MTC (55% vs 19%).

Conclusion: The mortality of severe liver trauma remains high, however regionalisation of major trauma in England is associated with improved outcome in this patient group. Further improvements could be delivered with better triage to MTCs.

A04

Re-operations following gastric band surgery. A three year review from a high volume tertiary-referral bariatric centre
Nikki Higgins, Charalampos Markakis, Maksolini Mlotshwa, Guy Slater, Christopher Pring, Michael Margarson, William Hawkins
St Richard’s Hospital, Chichester, UK

Background: The popularity of gastric banding has reduced, especially in the NHS, and primary gastric band insertion now represents less than 5% of the primary procedures performed in our institution – a busy, tertiary referral bariatric centre. Despite this, we were aware that there continued to be a significant burden on our service due to gastric band complications and sought to audit the impact that bands continued to have.

Methods: We retrospectively reviewed all patients who presented to our institute between April 2013 and May 2016; 121 patients with gastric bands in situ underwent band-related re-operations at our institute. 90% of the patients were female with an average age of 47 years (range 23 to 74). A majority of the bands had been inserted at a different institution. Reasons for presentation included: slippage (39), proximal migration (9), erosion (7), intolerance of the band/reflux (27), failure to lose weight (13), damage to the band (12), weight regain (1) and pain from or difficulty accessing the adjustment port (12). Procedures performed were: band removal (54), conversion to Roux-en-Y gastric bypass (30), band repositioning/adhesiolysis (15), band replacement (1) and adjustment port replacement or repositioning (21). All patients requiring conversion to a gastric bypass were assessed by the full surgical MDT but, generally, more minor interventions were not. There was only one significant complication (a leak following conversion to a bypass that was successfully treated) and the median length of stay was 1 day (range 0 – 7).

Conclusion: Despite very selective use of gastric banding as a primary procedure these figures mean that 13% of all procedures in our unit in this period were on patients with gastric band related complications. Many of these had their bands inserted in the private sector and this does suggest some variations in the quality of care in this sector that the NHS ultimately has to deal with. Although the number of revisional operations does appear to have reduced over this period, there is still an inevitable impact on the provision of primary procedures for new referrals to our bariatric service.

A05

Enhanced recovery after surgery (ERAS) in Liver Resection (LR): Initial Leeds experience
Vivek Upasani, Julie Jeffery, Raz Igsan, Deesa Ward, Giles Toogood, Raj Prasad, Peter Lodge, Ernest Hidalgo
St James University Hospital, Leeds, UK

Background: ERAS was developed to improve surgical outcomes and has gradually replaced conventional approaches in surgical care. The evidence in LR remains scarce. Aim: To evaluate applicability of ERAS in LR and to compare its outcome with a historical cohort of patients with a traditional care after liver surgery.

Methods: All patients who underwent an open liver resection between July 2012 and August 2015 were included in the analysis. Two subsets of patients were defined: Group Pre-ERAS July 2012 – December 2014 and Group-ERAS (January 2015-August 2015). This was not a controlled study. The Primary endpoint was length of hospital stay expressed in mean/median. Secondary endpoints were postoperative complications and patient experience.

Results: Between July 2012 and August 2015 a total of 503 open liver resections were performed. The group Pre-ERAS included 415 patients and the group-ERAS had 84. No obvious differences were observed when main demographics were compared as shown in

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Overall (503)</th>
<th>Pre ERAS (419)</th>
<th>Post ERAS (84)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>62/64</td>
<td>62/64</td>
<td>62/63</td>
<td>ns</td>
</tr>
<tr>
<td>Older than 70 years</td>
<td>164</td>
<td>137 (21%)</td>
<td>23 (27%)</td>
<td>ns</td>
</tr>
<tr>
<td>CRLM</td>
<td>353</td>
<td>304 (72%)</td>
<td>49 (60%)</td>
<td>ns</td>
</tr>
<tr>
<td>Major Resection</td>
<td>210</td>
<td>172 (41%)</td>
<td>38 (45%)</td>
<td>ns</td>
</tr>
<tr>
<td>Minor Resection</td>
<td>293</td>
<td>247 (69%)</td>
<td>46 (54%)</td>
<td>ns</td>
</tr>
<tr>
<td>Repeat resection: Y</td>
<td>84</td>
<td>71 (17%)</td>
<td>13 (15%)</td>
<td>ns</td>
</tr>
</tbody>
</table>

We were able to implement our ERAS-LR in all cases. Overall we saw a reduction in LOS when ERAS was implemented in LR. However with the exception of the incidence of postoperative complications* (chi-square value 6.29, p=0.0120) not statistical significance was achieved, likely due to the size of the ERAS group. Table 2 shows the results. Patients’ feedback was overwhelmingly positive.

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>Patient number</th>
<th>Overall Resection LOS</th>
<th>CRLM LOS &gt;70 yrs LOS</th>
<th>Postop complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>503</td>
<td>9.5/6</td>
<td>10.3/7</td>
<td>8.3/6</td>
</tr>
<tr>
<td>Pre-ERAS</td>
<td>414</td>
<td>10/7</td>
<td>11.7/5</td>
<td>8.6/7</td>
</tr>
<tr>
<td>ERAS</td>
<td>84</td>
<td>6/6</td>
<td>7.3/6</td>
<td>6.4/6</td>
</tr>
</tbody>
</table>

LOS: length of hospital stay; CRLM: colorectal liver metastasis; complications

* P-value is not significant.
Conclusion: The ERAS Program for liver surgery was feasible in all patients that we approached. No detrimental effects were recorded and we perceived a benefit, with a reduced length of hospital stay, and possibly reduced overall morbidity rates. Unfortunately the design of our study did not allow to obtain significant differences. We believe that ERAS in LR can improve outcomes as it has been shown in other surgical disciplines. Stronger evidence is required.

A06

Outcome measures in registered ongoing achalasia randomised controlled trials lack consistency

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Background: Our research group previously demonstrated that the reporting of subjective and objective outcomes in published randomised controlled trials (RCTs) assessing achalasia treatment lacks consistency. The aim of this study was to review the standard of outcome reporting in ongoing RCTs and determine if similar deficiencies exist within these more contemporary studies.

Methods: The WHO International Clinical Trials Registry Platform and ClinicalTrials.gov databases were searched using the term “achalasia.” Only RCTs of surgical procedures or interventions versus an appropriate comparator were included. The analysis was further restricted to studies that were ongoing, pending or recently completed and not yet published. Outcome reporting measures were extracted using a standardised form that included follow-up duration, symptom score tool, quality of life tool, pH monitoring, barium swallow, endoscopy and manometry.

Results: Of the n = 100 registered clinical trials identified, n = 14 RCTs were included in the review. The majority of these trials (n = 13) are evaluating per oral endoscopic myotomy. Only n = 4 studies plan to report primary outcomes after >24 months of follow-up. In these contemporary studies a single validated symptom score is being consistently used ( Eckardt score n = 11/14). However, the implementation of health-related quality of life measures is not as universal (n = 8/14 studies). Objective outcome assessment also varies: pH monitoring n = 6, barium swallow n = 6, endoscopy n = 6 and manometry n = 8 trials respectively.

Conclusion: Similar to our systematic review of published RCTs, this study demonstrates that the choice of subjective and objective outcome measures in ongoing achalasia RCTs lacks consistency. These methodological issues make comparison between different treatment modalities difficult and confirm the need to develop an achalasia “core outcome set” to avoid inconsistent and inappropriate outcome reporting.

A07

Impact of specialist hepatobiliary teams on treatment and outcomes in colorectal cancer patients with synchronous liver metastases in the English National Health Service: a population-based study of service centralisation

Abigail Vallance, Kate Walker, Angela Kuryba, James Hill, David Jayne, Ian Botterill, Ian van der Meulen

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Background: In selected patients with colorectal cancer (CRC) and synchronous liver metastases, liver resection (LR) offers potential cure. A specialist hepatobiliary team is present on-site in 21 of 142 (14.8%) English National Health Service (NHS) hospitals where CRC patients are treated. This study investigated the rate of LR, its timing in relation to bowel cancer resection, and survival, according to the presence of a specialist team in hospitals where patients were diagnosed.

Methods: Patients from the National Bowel Cancer Audit diagnosed with primary CRC between 2010 and 2014 who underwent CRC resection in the English NHS were linked to administrative hospital data to identify patients with liver metastases and those undergoing LR. Multivariable logistic and Cox regression was used to compare patients diagnosed at hospitals with and without a specialist hepatobiliary team on-site.

Results: 4,547 patients who had CRC and liver limited metastases were identified and 1,956 (43.1%) underwent LR. The 1,081 patients diagnosed at hospitals with a specialist hepatobiliary team were more likely to undergo a LR (adjusted odds ratio 1.51, 95% confidence interval (CI) 1.20 to 1.91, and their LR was more often simultaneous with CRC resection (26.1% compared to 59%). These patients also had better median survival (30.6 compared to 23.3 months; adjusted hazard ratio 0.81, 95% CI 0.74 to 0.90).

Conclusion: CRC patients with synchronous liver metastases who are diagnosed at hospitals with a specialist hepatobiliary team on-site are more likely to undergo LR and have better survival. This highlights the need to improve referral pathways to centralised specialist services.

A08

Incorporating RAS mutation status into the Clinical Risk Score better predicts survival after resection of colorectal liver metastases

Robert Jones1, Hassan Malik2, Stephen Fenwick3, Graeme Poston1, Krustofer Brudvik4, Felice Giulianeti5, Junichi Shinodoh6, Guillaume Passot7, Vegar Johansen Dagenborg3, Asmund Aydem Fredland1, Bárd Kuneck8, Claudius Conrad2, Thomas Alouët3, Bjørn Åke Bjørnabeh3, Jean-Nicolas Vauthery2

1 University of Liverpool, Liverpool, UK, 2The University of Texas MD Anderson Cancer Center, Houston, Texas, USA, 3Department of Hepato-Pancreato-Biliary Surgery, Osd University Hospital, Oslo, Norway, 4Department of Surgical Sciences, A. Gemelli Medical School, Rome, Italy, 5Graduate School of Medicine, University of Tokyo, Tokyo, Japan

Purpose: RAS mutation status is strongly predictive of outcome in primary colorectal cancer. We hypothesised that the addition of RAS status to traditional predictive markers of outcome after surgery for colorectal liver metastases (CRLM) could better stratify long-term survival.

Methods: 1172 patients who underwent resection of CRLM between 2005 and 2013 in 5 centres were included. Clinicopathological characteristics, RAS mutation status and outcome data were collected. Patients were divided into a discovery and validation cohort. Multivariate analysis of the discovery cohort identified factors predictive of overall survival. Log-rank analyses were used to compare survival after surgery. Predictive factors were then confirmed in a validation cohort.

Results: A total of 564 patients were included in the discovery cohort. RAS mutation was detected in 205 (36.3%) of the patients. On multivariate analysis, only RAS mutation (HR 2.69, 95% CI 1.92-3.77, P<0.001), positive primary tumour lymph node status (HR 2.08, 95% CI 1.36-3.17, P = 0.001) and diameter of the largest metastasis > 50 mm (HR 1.85, 95% CI 1.18-2.91, P = 0.007) were associated with overall survival. Each factor was assigned one point in a modified clinical risk score (m-CS), and was found to be highly predictive of overall survival (p<0.005). In an independent validation cohort of 608 patients, the m-CS remained strongly predictive of overall survival (p<0.008) and performed better than traditional clinicopathological scoring systems.

Conclusion: In a large contemporary patient cohort only RAS status, positive primary tumour node status and diameter of largest metastasis were predictive of outcome after surgery for CRLM. The proposed m-CS provides a validated method of assessing likely benefit of surgery for CRLM.
A09
Management of T2N0M0 Oesophageal Cancer
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Background: The benefit of neoadjuvant therapy in patients with clinically staged T2N0M0 oesophageal tumours is unclear. We aimed to evaluate the accuracy of clinical staging among patients with predicted T2N0M0 disease and determine the impact of neoadjuvant therapy on oncologic outcome.

Methods: Records for all patients with oesophageal carcinoma clinically staged cT2N0M0 by PET, CT, upper gastrointestinal endoscopy and endoscopic ultrasound and treated with curative intent between 2000 and 2015 were obtained from a prospectively maintained database. The clinical stage was compared to the final histopathological stage. The recurrence rates and 5 years disease-specific survival were also compared.

Results: Of 849 clinically staged patients and treated with curative intent, 84 (10%) were staged as cT2N0M0; 62 underwent surgery upfront; while 22 had neoadjuvant therapy, then surgery. For patients managed with surgery upfront, 27% (17/62) were pT2N0 on final pathology, 26% (16/62) being overstaged, and 47% (29/62) understaged. For neoadjuvant group the figures were 18% (4/22), 50% (11/22) and 32% (7/22) respectively. The proportion of overstaged tumours was significantly larger in the neoadjuvant group 50% (pT1N0) vs 26% (pT1N0) in surgery upfront group (p = 0.04). Also, neoadjuvant therapy was associated with significantly less node positive pathologies, 14% vs 40% (P = 0.02), compared to surgery upfront.

The recurrence rate was 32% in neoadjuvant group vs 43% in surgery upfront group (p = 0.33); local recurrence 9% vs 10%; systemic recurrence 23% vs 34% respectively. The 5yr disease-specific survival was similar, 63% in neoadjuvant group vs 62% in surgery upfront group (p = 0.4).

Conclusion: Accurate staging of T2N0M0 tumours remains challenging, with approximately half of all patients clinically staged as cT2N0M0 having locally advanced and/or node positive disease on final pathology. Neoadjuvant therapy was associated with more favourable postoperative pathology, but this did not translate into improved oncologic outcomes in long-term follow-up in this series.

B02
Patient selection and surgical timing for liver resection in colorectal cancer patients with synchronous liver metastases: a population based cohort study
Abigail Vallance, Kate Walker, Angela Kuryba, James Hill, David Jayne, Ian Botterill, Jan vanderMeulen
1 Royal College of Surgeons of England, London, UK; 2 Manchester Teaching Hospitals, Manchester, UK; 3 University of Leeds, Leeds, UK; 4 St. James’s University Hospital, Leeds, UK

Aim: In patients with colorectal cancer (CRC) liver metastases liver resection (LR) is the only cure associated with cure. This population-based study investigates: i) factors associated with LR in patients presenting with synchronous CRC and liver metastases, ii) timing of LR in relation to bowel cancer resection and iii) survival outcomes.

Method: Patient data from the National Bowel Cancer Audit diagnosed with primary CRC from 2010–14 were linked to Hospital Episode Statistics data to identify liver metastases and LR. Multivariable logistic regression was used to identify LR determinants.

Results: 1,956/4,547 (43-1%) of patients presenting with CRC and synchronous liver metastases who underwent bowel resection, had a LR. Older patients, those with co-morbidities, nodal disease or emergency presentation were less likely to undergo LR. A bowel-first approach was employed in 79.1% (1,548/1,956) patients, simultaneous resection in 11.5% (235/1,956) and liver-first approach in 9.4% (183/1,956). There was significant regional variation in the timing of bowel resection in relation to LR. Simultaneous resection was more common in patients with less co-morbidities and those with right-sided CRC. 30-day mortality following LR was 1.0% (20/1,956) and 90-day mortality was 2.2% (42/1,956). In an adjusted model, mortality was found to be 3.5-fold higher in those who did not have LR.

Conclusions: LR in patients presenting with synchronous CRC liver metastases is associated with low peri-operative mortality and an overall survival advantage. Further consensus is required as to the timing of LR in relation to resection of primary CRC.

B03
Should clinicians and dieticians offer a nutritional blood panel test as part of routine follow up after pancreatic resection? Qaisar Jalal, Kate Latimer, Anand Bhatt, Ahmed Al-Mukhtar, James Gardiner-Thorpe
Sheffield Teaching Hospitals, Sheffield, UK

Background: The literature contains case reports of survivors of pancreatic or pancreaticoduodenal resection who developed severe nutritional deficiencies in the long term. While often multifactorial, putative mechanisms could be pancreatic enzyme insufficiency, removal of duodenum, shortening of small bowel, and functional alterations. The aim of this study was to provide data to develop evidence-based local guidelines for surveillance protocols.

Methods: Between January 2015 and June 2016, an unselected cohort of patients seen in the HPB clinic for routine follow up after pancreaticoduodenectomy, partial or total pancreatectomy were offered extra screening using a standard haematric blood panel (ferritin, vitamin D, calcium, Mg, Se, Zn, B12, and folate). Screening was stopped if cancer recurred.
Results: Fifty-eight patients were studied. Follow up was 6 months to 9 years post surgery. Despite empirically adequate pre- and nutritional supplement therapy, iron deficiency (defined as ferritin <30 µg/L) was detected in 40/58 (68.9%) patients. Vitamin D deficiency (<50 nmol/L) was found in 21/58 (36.2%). Duodenectomy was not a significant risk factor for either deficiency (chi-square; p>0.05). The incidences of other subclinical deficiencies were Mg (51.7%), Se (34.5%), B6 (97%), folate (0%) and calcium (0%). Supplementation with oral iron and vitamin D was always successful in restoring normal levels in the disease-free.

Conclusion: Vitamin D and iron deficiency are very common after successful pancreatic surgery. Deficiencies in Mg, Se, Zn, B6, folate, and calcium are rare. In addition to standard specialist dietetic advice and monitoring, our new local guidelines are to offer 6-monthly ferritin and vitamin D blood testing (total unit cost £23.41) to disease-free post-pancrectectomy patients and adjust supplementation accordingly.

B04

Single Incision Laparoscopic Cholecystectomy: A Single Surgeon Series of 258 Patients
Mohammed F. Hamdan, Louise De Silva, Christopher Wong
Southmead Hospital, North Bristol NHS Trust, Bristol, UK
Background: Laparoscopic cholecystectomy (LC) has traditionally been performed using multiple skin incisions. Single-incision laparoscopic surgery has emerged as an alternative technique; of which theoretical benefits include less pain, shorter hospital stays, quicker return to work, and better cosmesis while continuing to limit operative complications and costs. This study was designed to assess the operative outcomes and the safety of single-incision LC (SILC).

Methods: A retrospective study of all patients who underwent SILC by a single surgeon from May 2009 to October 2015. Demographic and peri-operative data were analysed. Continuous variables are expressed as median and range.

Results: A total of 258 (207 Females) SILCs were performed in the study period. Median age was 44 (16–78) years. Median body mass index was 25 (18.2–35) kg/m². The presentation was elective (n = 132), delayed (n = 79) and acute (n = 27). The indications were biliary colic (n = 174), cholecystitis (n = 37), gallstone pancreatitis (n = 29), choledocholithiasis (n = 15), gall bladder (GB) polyps (n = 1) and GB dyskinesia (n = 2). The mode of admission was daycase (DC) (n = 220), elective inpatient (n = 8), and urgent (n = 30, of which 3 were from the delayed presentation group). Median operative time was 40 (12–105) minutes. No cases were converted to open or conventional LC; however an additional 5mm port was used in 4 cases (2 were the first in the series for GB traction, and 2 to help control bleeding due to failure of the cystic artery clip). 11 patients had complications postoperatively including a bile leak (n = 2), patients 1 and 28 in the series. 1 required laparoscopic washout and both required ERCP, retained common bile duct stone (n = 1), wound infection with 1 requiring readmission and laparotomy (n = 1), postoperative bleeding requiring laparoscopic washout (n = 1). There were no complications with the urgent group. Median length of stay was 0 (0–8) days. 30-day readmission was 12 (5%). Of those planned to have DC surgery 32 (14.5%) remained in hospital with a median LOS of 1 (1–5) days.

Conclusion: SILC is safe in both elective and acute settings. Both operative times and postoperative outcomes are comparable to those of conventional LC. Complications may develop early when adopting this new technique.

B05

Delayed referral increases morbidity in Bile Duct Injury (BDI) after Laparoscopic Cholecystectomy (LC)
Vivek Upasani, Sonsoles Martinez, Magdy Attia, Peter Lodge, Giles Toogood, Raj Prasad, Ernest Hidalgo
St James University Hospital, Leeds, UK
Background: Our aim was to ascertain if different referral patterns (early/late) had any influence in the clinical outcomes of BDI.

Methods: A retrospective study involving all patients with BDI post LC managed within our centre from 2000–2014. BDI was described according to Bismuth and Strasberg classifications. Based on emerging evidence, referrals were arbitrarily defined as early (within 96 hours from BDI) and delayed (>96 hours). Demographics, original operation, details on referral time, level of injury and postoperative morbidity (Clavien) were collected.

Results: 63 patients were included. 55 patients (87.3%) required surgical intervention: 5 surgical drainage and 50 biliary duct surgical repair (79%). The Early referral group included 33 patients (52.4%) and Late referral group 30 patients (47.6%). There were no significant differences regarding demographics or severity of the injury (Bismuth classification). There was a significantly higher incidence of right hepatic artery injury (23% vs. 3%) in the late referral group (Strasberg E1). The number of patients with complications (Clavien ≥ II) was significantly higher (89 vs. 36%) in the late referral group (p<0.001). Again, there was a significantly higher incidence of early (≤6 weeks) and delayed (>6) postoperative complications in the late referral group. The average number of surgical interventions required per patient in the early referral group was 1.8 compared to 2.5 in the late referral group (p<0.05). The average number of invasive procedures required per patient (surgical or radiological) was also higher in the late referral group (4 vs. 2–5, p<0.05). There were significant differences comparing the time elapsed between BDI-to-reconstruction (3 vs. 88 median days, p<0.05) and referral-to-hospital discharge (9 vs. 59 median days, p<0.05). In multivariate analysis only delayed referral (OR 7.58, 95% CI 1.21–26) and Strasberg-E injuries (OR 4.86, 95% CI 1.10–20) were significant.

Conclusion: There is a significant variability in referral times to a specialist centre following the diagnosis of BDI. In our experience, a late referral was associated with a higher incidence of post-treatment complications and a longer recovery period. That could be (1) due to missing the optimal time to repair the injury or (2) failing to recognize the extent of the BDI. These observations strongly support the decision of an early transfer of patients to a tertiary institution as soon as the BDI is detected.

B06

Diversifying the Indications for Pancreas Resection and Autologous Islet Cell Transplantation (IAT) in both Adults and Children
Jennifer A Logue1, William E Scott III1, Minna Honkanen-Scott2, Julian De Haviland2, Ahmad Abou-Saleh1, Derek M Mana1, James AM Shaw1, Ann Dickinson1, Hany Gabre1, Ashley R Dennison4, Richard M Charnley1, Steven A White4
1Institute of Transplantation, Newcastle upon Tyne, UK, 2Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne, UK, 3Department of Surgery, Great North Children’s Hospital, Newcastle upon Tyne, UK, 4Department of Hepatology and Pancreatic Surgery, University Hospitals of Leicester, Leicester, UK

Background: Pancreas resection combined with IAT is a controversial procedure with limited experience in the UK and is not currently funded by the NHS. We present our experience of IAT in patients with chronic pancreatitis and pancreatic trauma including the UK’s first paediatric transplant.

Methods: We have performed 6 pancreatic resections with IAT over an 18 month period. 3 patients with chronic pancreatitis (2 hereditary, 1 idiopathic) have undergone total pancreatectomy and IAT. Two patients had previous Frey procedures. 3 patients (2 adults, 1 child) sustained blunt pancreatic trauma and underwent extended left pancreatectomy combined with IAT. Complications were graded according to the Clavien-Dindo classification.

Results: In the chronic pancreatitis group the islet yield was low due to severe fibrosis / previous drainage procedures (<50,000 IEQ). The first patient is now opiate independent and the remaining 2 patients only require 20% and 12.5% of their pre-operative opiate dose respectively. All have marked improvement in their quality of life. All require low dose insulin analogue therapy with in vivo C-peptide secretion at 12 months. In contrast the trauma patients had a much greater islet yield (99,750 – 298,149 IEQ). All are insulin independent. There were no complications related to portal vein infusion and no deaths, one patient required re-laparotomy for an infected collection.

Conclusion: Pancreatectomy and IAT can be used as a salvage procedure in patients who have failed all other standard therapies but in our opinion results would be superior if performed much earlier in the course of their disease. It is
also a feasible management option for complex pancreatic trauma in both adults and children.

**B07**

Implementation of a fast track pathway to pancreaticoduodenectomy for pancreatic cancer: audit of initial experience

Pooja Prasad#, Anna M Murray#, Ravi Marudanayagam#, John R Isaac#, Robert P Sutcliffe#, Paolo Mui sesan#, Darius F Mirza#, Mark Ew story#, Hilary Brown#, Keith J Roberts#

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2Health Services Management Centre, University of Birmingham, Birmingham, West Midlands, UK.

**Background:** Survival among patients with pancreatic cancer is low and rates of morbidity/mortality some of the highest of any surgical procedure. Jaundice is the most common presenting symptom and most patients undergo pre-operative biliary drainage before randomised trials demonstrating increased complications following biliary drainage. Reducing time to surgery could potentially avoid biliary stenting but this is not routine practice within the NHS. A fast track pathway has been developed and implemented at our service. Similar initiatives have been attempted previously, though they fail to become permanent. Reasons for this are unclear. This study seeks to assess the role of early surgery from various perspectives.

**Methods:** Consecutive patients with resectable tumours and obstructive jaundice were identified from a prospectively maintained database from August 2015 to March 2016. The pathway from presentation through to surgery in tertiary care was evaluated for each patient. Healthcare utility analysis was performed using data from HES and hospital records.

**Results:** Among 62 patients, 19 underwent fast track surgery. Reasons for not undergoing fast track surgery were patients were already stented (40) and logistic problems/fitness (3). The median times from initial CT scans to referral (3 vs 16 days) and from referral to surgery (14 vs 86 days) were shorter in the fast track group (total 20 vs 62 days; all p<0.0001). This was associated a reduction of healthcare use between first presentation and surgery. The cost was significantly lower in the fast track group (p=0.05). The rate of complications increased with the time to surgery. The mean length of stay between referral and surgery was greatest in patients waiting in excess of 90 days for surgery (7 days, r0-39) and lowest in the fast-track group (2 days, r0-10).

Every patient in the fast track group underwent cancer resection surgery whilst 10/42 in the traditional group were found to be unresectable (p=0.027).

**Conclusion:** This pilot study demonstrates fast track surgery and avoidance of biliary stenting, as part of a dedicated pathway, reduces time to surgery, complications, healthcare utility and improved outcomes. Ongoing assessments will review the pathway from the perspective of the clinicians at receiving and referring units and patients and carers.

**B08**

Development of a standardised investigation pathway for post cholecystectomy pain

Martin Michel, Aminah Khan, Thomas White, Mohammed Gouda, Pedro Ballester, Brian Dobbins, William Ainslie, Arin Saha

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**Background:** Post cholecystectomy pain is a common symptom caused by a heterogeneous group of disorders which can be difficult to diagnose. Most patients undergo the full range of investigations including blood tests, ultrasound (US) and MRCP which presents a resource burden. The aim of this study was to quantify the range of conditions that cause post cholecystectomy pain and to suggest an algorithm for investigation to maximise resource utilisation.

**Methods:** All patients who re-presented to hospital services with post cholecystectomy pain from 2014–2016 and underwent Liver function tests, US and MRCP were identified from radiological and clinical database systems. Minimum median follow-up was 1 month.

**Results:** There were 117 patients (96 females [82%]; median age 54 yrs. [range 19–91]). Overall there were 71 patients (60-6%) with normal investigations and 19 patients (16-2%) with abnormal MRCP (Common bile duct [CBD] stone, Common bile duct stenosis, Post-operative collection or stigmata of pancreatitis). Of the 117 patients, only 12 (10-2%) had a bile duct abnormality (11 CBD stones and 1 CBD stenosis) detected on MRCP; 98 patients (83-7%) had a normal MRCP. All patients who had a bile duct abnormality on MRCP had hyperbilirubinaemia or an US duct diameter of greater than 10mm. No patient with normal serum bilirubin levels and an ultrasound duct diameter less than 10mm had a duct abnormality on MRCP. Of 10 patients with dilated ducts and hyperbilirubinaemia 4 (40%) had a normal MRCP.

**Conclusion:** The majority of patients with post cholecystectomy pain do not require MRCP. In this study, 83-7% of patients investigated had a normal MRCP. Furthermore, dilated ducts on US and hyperbilirubinaemia in themselves are not sufficient to confidently predict bile duct abnormalities. These data suggest that the initial investigations should be confined to blood tests and US; subsequent MRCP should be reserved for patients with dilated ducts or hyperbilirubinaemia rather than continually ordered. Discussion with the resident hospital UGI team may help implement these recommendations.

**B09**

Outcomes following vein resection during pancreaticoduodenectomy in a large hepatobiliary and liver transplant unit

David Bartlett, Darius Mirza, John Isaac, Paulo Mui sesan, Keith Roberts, Robert Sutcliffe, Ravi Marudanayagam

Queen Elizabeth Hospital Birmingham, Birmingham, UK

**Background:** In many units vein resection (VR) has become a routine step during pancreaticoduodenectomy (PD) when there is portal/superior mesenteric vein involvement but the tumour is otherwise resectable. However, there remains a concern that VR may lead to an increased complication rate and poorer survival. This study compares the outcomes of patients undergoing VR with those undergoing standard PD in a large HPB/liver transplant unit.

**Methods:** Data was collected prospectively for all patients undergoing PD with or without VR between March 2009 and February 2016. VR was performed in the presence of tumour inseparable from the SMV, splenic vein or portal vein without other contraindications to resection. Group specific cadaveric donor iliac vein was used when vein patch/interposition graft was required.

**Results:** 576 patients underwent PD during the study period of which 99 patients (17-2%) underwent VR. 49 VRs (49%) were full circumference, of which 27 (55%) were reconstructed with a cadaveric interposition graft while in 22 (45%) a direct end to end anastomosis was possible. 30 (51%) of patients underwent a partial circumference resection with primary closure in 45 (90%) and cadaveric vein patch in 5 (10%). There was no difference in the sex distribution or median age of patients between the VR and non – VR groups. The majority (70-7%) vein resections were for pancreatic adenocarcinoma but this only accounted for 37-5% resections in the non-VR group (p<0.0001).

37 (37-4%) VR patients developed at least 1 complication compared to 233 (48-8%) non-VR patients (p=0.046). There were 7 (7-1%) deaths within 30 days in the VR group compared to 20 (4-2%) in the non-VR group (p=0.29).

2 patients developed portal vein thrombosis within 1 week following VR and died while a 3rd patient developed thrombosis at 3 weeks and survived. The median (range) length of stay was 9 (1–106) days in the VR group and 10 (0–281) days in the non-VR group (p=0.53). Overall median survival was 486 days in the VR group compared to 442 days in the VR resection group (p=0.29).

**Conclusion:** VR can be carried out safely during PD and offers a similar long term survival to patients undergoing standard PD without VR.
Oesophago-Gastric Scientific Papers
Bury Theatre
Friday 23 September 2016 (08:30 – 10:00)

C01

Does surgery improve survival for clinical N3 M0 oesophageal or oesophagogastric junctional cancer?
J Robert O’Neill, Ewan D Kennedy, Darja Kremel, Matthew Trail, Owain A Barratt, Simon Paterson-Brown, Richard JE Skipworth
Royal Infirmary of Edinburgh, Edinburgh, UK

Background: Patients with oesophageal or oesophagogastric junctional (OGJ) cancer and 7 or more lymph node metastases (N3 stage) have a reportedly poor prognosis and the benefit of resection is in doubt.

Aim: To determine if resection offers a survival benefit for patients with localised (M0) clinical N3 (cN3) oesophageal or OGJ cancer over palliative chemotherapy or symptomatic treatment alone.

Methods: Patients with clinical node positive (cN+) and/or metastatic oesophageal or OGJ cancer were retrospectively identified from the SE Scotland Upper GI MDT records between 2006 and 2016. A final clinical stage was derived by combination of the CT, CT-PET and EUS clinical stage using TNM 7. Treatment and survival data were captured from clinical records and survival analyses performed.

Results: Patients staged as cN+M0 (n = 479) had a better median overall survival (OS) than those staged as cN+M1 (n = 89; 21.5 months vs. 9.0 months; P<0.001). Age, gender, tumour location, CT and cN stage were not associated with prognosis. Only cM stage was independently predictive of OS on multivariable analysis (p<0.001). Resection for cN1M0 disease (n = 31) was associated with significantly improved OS compared to palliative chemotherapy (n = 9) or symptomatic treatment only (n = 10) (p<0.01). However, only 9 patients (29%) undergoing resection for cN1M0 disease had pathological N3 (pN3) disease with the remainder downstaged. Indeed of the 325 cN+M0 patients undergoing resection, neoadjuvant chemotherapy was used in 256 (79%) of patients and only 87 (27%) were correctly N-staged, with 108 (33%) upstaged and 128 (40%) downstaged. In the 62 patients going straight to surgery, however, the cN and pN-stage corresponded in only 20 cases (32%), with 14 patients (22%) understaged, and 28 patients (45%) overstaged. Patients undergoing resection for confirmed pN3 disease had a median OS of 13.6 months, not significantly longer than those undergoing palliative chemotherapy (10.5 months) or symptomatic treatment only (9 months) for either cN+M0 or cN+M1 disease.

Conclusion: Survival was longer after surgery for cN1M0 oesophageal or OGJ cancer, however 70% of patients were overstaged. Patients with pN3M0 disease have a similar prognosis to those treated palliatively with metastasis. Clinical staging must be improved.

C02

The Performance of Circulating Biomarkers in the Prediction of Response to Neoadjuvant Therapy in Patients with Oesophageal-gastric Cancer
David Bunting1, Richard Berrisford1, Tim Wheatley1, Grant Sanders1, Ruth Aying2

1Peninsula Oesophago-gastric surgical unit, Plymouth, UK, 2Derriford Combined Laboratories, Plymouth, UK

Background: The study aimed to investigate whether pre-therapy plasma/serum levels of the biomarkers M2-pyruvate kinase (M2-PK), CA19-9 and CA72-4 can be used to predict the response to neoadjuvant therapy in patients with oesophageal and gastric carcinoma

Methods: A multi-centre, prospective study was set up to recruit patients with oesophageal and gastric adenocarcinoma before starting neoadjuvant therapy. Analysis of biomarker levels was performed on peripheral blood samples taken before starting neoadjuvant therapy. Clinicopathological, demographic and radiological data were recorded in all patients. Patients were divided into responders to neoadjuvant therapy (TRG1-3) and non r-responders (TRG4-5). Biomarkers levels were compared in responders and non-responders.

Results: A total of 165 patients were initially recruited. 60 patients were excluded due to a number of reasons. 105 patients were eligible for analysis, 27 responders and 78 non-responders. Mean pre-therapy M2-PK levels were 27.4 in responders and 36.4 in non-responders, (P = 0.037 two-sided Mann–Whitney U test). Differences persisted in patient subgroups when pre-operative radiotherapy patients were excluded and when only patients receiving triple agent chemotherapy were included. None of the other markers showed significant differences between the groups. Binary logistic regression showed that M2-PK levels were able to predict response with each unit increase in the biomarker associated with a 4.1% decrease in the likelihood of response (P = 0.027). An examination of predicted probabilities identified that in 12-4% patients, the biomarker level would be sufficiently high or low to amend the baseline probability of responding to neoadjuvant therapy with a 95% certainty. Therefore 1 in 8 patients would stand to benefit from the test by providing an individualised probability of responding to therapy.

Conclusion: Pre-therapy M2-PK levels can predict the likelihood of responding to neoadjuvant therapy in patients with OGJ cancer but the degree of accuracy is such that the test would have greater clinical benefit when combined with other predictive markers as they become available.

C03

Long term survival of Oesophageal Squamous cell cancers in England and Wales
Georgina Chadwick1, Mira Varagunam1, Christian Brand1, Nick Maynard1, Tom Crosby1, Stuart Riley1, Kimberley Greenaway2, Julie Michalowski2, David Cromwell1

1Royal College of Surgeons, London, UK, 2Oxford Radcliffe Hospitals NHS Trust, Oxford, UK, 3Wales Cancer Centre, Cardiff, UK, 4Northern General Hospital, Sheffield, UK, 5HSCIC, Leeds, UK

Background: For mid/lower oesophageal squamous cell cancers (SCC), both surgery and chemoradiotherapy are considered potentially curative treatment options. We investigated use of these two treatment modalities in England and Wales & associated 5 year survival.

Methods: This study uses data from the 1st National Oesophago Gastric Cancer Audit (for patients diagnosed with mid/lower oesophageal SCC between October 2007 and June 2009. 5-year survival was calculated using ONS mortality data and logistic regression models were used to derive adjusted 5-year survival estimates.

Results: The 2,343 patients had a mean (SD) age at diagnosis of 70.7 (±11.6), and 63.9% were male. 32.8% were managed with curative intent. Overall, only 12.9% of patients survived 5 years; among those managed with curative intent, 33.0% survived 5 years. Where treatment intent was curative, 503 (65.4%) were managed surgically, 253 (32.9%) received definitive oncology and 13 (1.7%) had an endoscopic resection. Patients were more likely to be managed surgically if they were younger (p<0.001) or had a performance status of 0/1 (p<0.002). Overall 5 year survival was 36.1% after surgery vs 24.9% for definitive oncology, this difference was not significant after adjusting for confounders.

Conclusion: A third of patients diagnosed with mid/lower oesophageal SCCs managed with curative intent survived 5 years. After adjusting for known confounders, 5 year survival did not vary according to choice of treatment modality.
C04
The effects of pre-operative carbohydrate loading on the metabolic response to surgery in a low resourced setting
Elroy Weledji1, Sylvie Njong2, Alain Chichom3, Vincent Verla4, Marcelin Ngowe3
1 University of Buea, Buea, S.W. Region, Cameroon, 2 University of Buea, Buea, S.W. Region, Cameroon, 3 University of Buea, Buea, S.W. Region, Cameroon, 4 University of Buea, Buea, S.W. Region, Cameroon

Background: The potential role of nutritional intervention to optimize surgical outcome has yet to be fully realized and nutritional support is clearly underutilized in low resourced settings. There is usually a stress response to surgery that involves catabolism and gluconeogenesis resulting in postoperative hyperglycaemia. Post-operative hyperglycaemia is a risk factor for postoperative complications and preoperative fasting further aggravates this response. A carbohydrate (CHO) drink instead of fasting is expected to decrease insulin resistance and reduce post-operative hyperglycaemia. The aim of this study was to assess the effect of pre-operative CHO loading on post-operative hyperglycaemia and post-operative complications in open surgery.

Methods: We conducted a hospital-based prospective case control study from December 20th, 2015 to March 18th, 2016. 70 patients who were scheduled for elective surgery were conveniently sampled to either a case or a control (CHO and FAST) group. CHO group defined as patients who consumed 660mls of a CHO rich drink containing 14g of CHO/100mls the night before surgery, followed by 330mls the morning before surgery 3 hours before anaesthesia. The FAST group defined as patients who fasted over a minimum of 8 hours before surgery. Postoperative capillary blood glucose was measured 2hours after surgery and on postoperative day 1 (POD1). Postoperative hyperglycaemia was defined as a fasting blood glucose>126mg/dl while postoperative complications were reported using the Clavien-Dindo system. Data was analyzed using Epi Info version 7 statistical software with a significant criterion (p<0.05).

Results: We recruited 70 patients; 35 patients per group. 40 (57.14%) were females and 30 (42.86%) were males. In this study, the mean age, surgery type and mean duration of surgery were significant between groups but upon logistic regression for significant clinical and demographic variables they were not significant. We recorded no anaesthetic complications as a result of preoperative energy drink consumption. The mean blood glucose on the first postoperative day was significantly higher in those who fasted (146±26mg/dl) than in those who received the energy drink (123±6mg/dl; p=0.004). Amongst the different postoperative complications, postoperative infections were significantly higher in the control group than in the CHO group (31.43% and 8.57%; 95% C.I: 1.2275-19.4715) p=0.031. The mean length of hospital stay was longer in the FAST group than in the CHO group (9.17±4.12 vs 6.65±1.35) (range 70–87). Of these 26 proceeded for surgery. The others were managed non-operatively for various reasons. Post-operative frailty scores had a significant positive correlation with the total length of stay (r=0.497, p=0.009) and severity of post-operative complications (r=0.467, p=0.02). There was no significant correlation between cognitive scores and length of stay or complications.

Conclusion: These preliminary findings show that the Reported Edmonton Frailty Scale is associated with adverse post-operative outcomes after oesophago-gastric resections. Optimisation of frailty should be an important target for medical optimisation. Incorporating geriatricians within cancer MDTs should be a priority for the future to improve access to surgery and improve outcomes.

C05
Objective measures of frailty in the elderly with resectable oesophago-gastric cancer are associated with poor post-operative outcomes
Laura Halliday1, Justyna Rymarowicz2, David Shipway2, Krishna Moorthy1
1 Imperial College London, London, UK, 2 Imperial College Healthcare NHS Trust, London, UK

Background: With an aging population in the UK, the number of elderly people being considered for oesophageal and gastric resections is rising. Frailty, a notable feature in the elderly, is characterised by decreased physiological reserve and there is growing evidence that this is more important than age in predicting mortality. However, few data exist describing the role of frailty in predicting complications following oesophago-gastric resections.

Methods: A pre-operative assessment was undertaken by a consultant geriatrician as part of new service - Comprehensive Oncogeriatric Service (GOGS) for all elderly patients (age≥70) with resectable oesophago-gastric (OG) cancer. Frailty and cognition were assessed using the Reported Edmonton Frailty Scale and Montreal Cognitive Assessment respectively. The results were compared to post-operative outcomes, including length of stay and post-operative complications graded by the Clavien-Dindo classification.

Results: 48 patients with non-metastatic OG cancer were reviewed by the service between June 2014 and December 2015. Mean age was 78 years (range 70–87). Of these 26 proceeded for surgery. The others were managed non-operatively for various reasons.

Conclusion: Both pre-operative frailty scores were associated with poorer post-operative outcomes in elderly individuals undergoing OG surgery and there is growing evidence that this is more important than age in predicting mortality. However, few data exist describing the role of frailty in predicting complications following oesophago-gastric resections.
C07

Bile acid malabsorption post oesophagectomy and gastrectomy
Michelle Fanning¹, Claire Donohoe², Sean Cournoyer¹, Jennie Cooke¹, Niall Sheehy¹, Narayanasamy Ravi², John Vincent Reynolds²
¹Clinical Nutrition, St. James’s Hospital, Dublin, Ireland, ²Surgery, St. James’s Hospital, Dublin, Ireland

Background: Malabsorption and malnutrition are prevalent following oesophagectomy and gastrectomy and negatively impact on quality of life. We aimed to investigate bile acid malabsorption (BAM) in patients with symptoms of malabsorption after curative resection of oesophageal and gastric cancer.

Methods: In this longitudinal study of disease-free patients we used a modified gastrointestinal symptom rating scale (GSRS) questionnaire, incorporating a Bristol Stool Chart, to assess symptom severity at routine postoperative outpatient appointments. Patients identified with frequent malabsorption symptoms(s) or with type 6/7 stool or with ≥ 4 bowel motions daily were referred for further systematic investigation. Investigation included faecal elastase, coeliac serology, glucose hydrogen breath test and SeHCAT scan. A SeHCAT retention value ≤ 15% was indicative of BAM. Patients with moderate or severe BAM (a retention value ≤ 10%) or with mild BAM and symptoms refractory to other therapy were considered for treatment with the bile acid sequestrant colesevelam.

Results: 51 patients (36 oesophagectomy, 15 gastrectomy) underwent systematic investigation. The median time from surgery to SeHCAT was 12 months (range 3 months–9 years). 21 patients (41%) were diagnosed with BAM. BAM was severe, moderate and mild in 7, 8 and 6 patients respectively. Of the 21 patients with BAM, 5 patients also had exocrine pancreatic insufficiency (EPI) while 17 patients had small intestinal bacterial overgrowth (SIBO). 15 patients were prescribed colesevelam with significant reduction in bowel frequency (p = 0.006) and a better quality of life (p = 0.019) on treatment.

Conclusion: BAM post upper gastrointestinal cancer resection may be under-appreciated. With potential associations with quality of life in survivorship, and with modifiable targets, BAM, EPI, SIBO and their interplay should be a focus of future research.

C08

Value of a successful oesophago-gastric cancer support group in providing vital feedback to the clinical team for improving patient-centred care
Simon Toh¹, Lorraine Sutton¹, Phil Coverdale², Mike Cotton², Pamela Bonshor², Brinni Robinson¹
¹Portsmouth Hospital NHS Trust, Portsmouth, Hampshire, UK, ²OPA SPLASH, Portsmouth, Hampshire, UK

Background: Ongoing peer support & patient-centred care are important for cancer survivorship, especially in patients with oesophago-gastric tumours. We describe the creation and development of a hugely successful patient support group and the value of a feedback process to increase the clinical teams’ awareness of our patients’ needs and led to improvements in care.

Methods: A patient support group was started in Dec 2013 with patient, nurse specialist, dietetic and surgical team involvement. Quarterly meetings have been convened since on a Saturday with a programme designed by the patients to address their psychological, dietetic, oncological and surgical needs. The group has an active website with social media and newsletters, with activities including awareness campaigns, fundraising for the Oesophageal Patients Association (OPA) and ‘Promoting Health & Wellbeing’ events in association with Macmillan Cancer Support. A feedback process was devised to assess the impact of the programme and discover the specific needs of our patients in order to implement changes to meet them.

Results: The attendance of the group has been between 60–90, making this one of largest patient support groups in the UK OPA. The feedback from 127 patients/carers indicated that the meetings were helpful in 125/127, accessible in 123/127, supportive & welcoming in 127/127. 118 specific patient responses were analysed that led to changes in practice including: 1. A buddy scheme with former patients supporting new ones 2. Better telephone access to specialist dietitians 3. Development of patient-friendly advice sheets eg on dumping syndrome 4. Talks on psychological impact of cancer on patients & carers 5. Question & answer session with clinical team at each meeting 6. Recognising and harnessing the power of patient activism in the ‘Action on Heartburn’ campaign 7. Improved communication from our MDT to our patients.

Conclusion: A successful patient support group can be established with dedication and commitment from patients and their clinical team with a feedback process to ensure that the needs of our patients are met and that our clinical services remain patient-centred.

C09

A pilot study of a standardised care pathway incorporating enhanced physiotherapy for patients undergoing oesophagectomy or total gastrectomy
Laura Nicholson¹, Helen Gríst¹, Jonathan Webling¹, Bernadette Fairley³, Olga Tucker⁴
¹University Hospitals Birmingham, Birmingham, UK, ²Heart of England Hospital, Birmingham, UK

Background: Oesophagectomy and total gastrectomy (TG) are associated with significant postoperative morbidity, reduced functional capacity and reduced quality of life (QoL). Evidence from colorectal surgery and critically ill ICU populations demonstrates significant benefits of perioperative habilitation. There is no published evidence to support this approach in major UGI cancer resectional surgery.

Methods: Consecutive patients from November 2014 and March 2015 were entered into a standardised care pathway (SCP), incorporating prehabilitation, an enhanced recovery after surgery pathway (ERAS) and rehabilitation. ERAS involved twice daily physiotherapy for five days postoperatively with pre-specified mobility milestones. Prehabilitation involved twice-weekly cardiovascular and strengthening classes pre-operatively for 4 weeks whilst rehabilitation was once weekly for 6 weeks post hospital discharge. Outcomes measured were functional capacity using the incremental shuttle walk test (ISWT), mobility by MMS, anxiety and depression with HADS score, perceived health status by EQ5D and hospital length of stay (LOS).

Results: 28 patients were recruited onto the SCP. 13 of 17 eligible patients attended prehabilitation. Patients on average had a 28% increase in physical fitness, 12% increase in perceived health status and a reduction in levels of anxiety and depression pre-operatively. Post operatively patients were more mobile at ICU discharge (MMS 7 vs 6) and quicker to mobilise 30m (3.2 vs 4.7 days) in comparison to 2014 data. A reduction in LOS was seen for patients receiving ERAS in comparison to the previous year (17.5 vs 20.8 days), with the greatest reduction seen for those patients also receiving prehabilitation (14.7 days). 10 patients attended rehabilitation, achieving a 109% increase in physical fitness, 12% increase in perceived health status & reduction in anxiety & depression.

Conclusion: The implementation of an enhanced perioperative physiotherapy programme is feasible in a high risk cohort undergoing major oesophagogastric surgery with an improvement in all outcomes measured. A prospective multicentre national RCT is required to determine if perioperative enhanced physiotherapy in patients undergoing OGR results in improved patient quality of life outcomes, reduced complications and overall short term survival compared to standard care.

Bariatric Scientific Papers
Tower Gallery

Friday 23 September 2016 (08:30 – 10:00)

D01

Antral-preserving or antral-resecting sleeve gastrectomy for morbid obesity: a systematic review and meta-analysis
Emma Rose McGlone¹, Ajay Gupta², William Maclean¹, Marcus Reddy³, Omar Khan¹
¹St George’s University Hospital, London, UK, ²Imperial College, London, UK
Results: Laparoscopic sleeve gastrectomy (LSG) is an effective operation for obesity. There is controversy as to the optimal technical approach for this procedure with some advocating sparing of the antrum (antral-preserving, AP) and others supporting commencement of resection close to the pylorus (antral-resecting, AR). The aim of this systematic review was to evaluate data regarding the outcomes of AR versus AP sleeve gastrectomy for obesity.

Methods: A systematic review of studies comparing AP (2 to 2.5cm from pylorus) with AP (>2cm from pylorus) in patients undergoing primary sleeve gastrectomy for obesity was conducted. Primary outcomes were % excess weight loss (%EWL) at 12 month and 24 months after operation. Secondary outcomes included post-op complications: bleeding, leak and incidence of de novo gastro-oesophageal reflux disease (GORD). All eligible randomised control trials (RCT) and good quality control trials were included. We used STATA 14 to estimate summary statistic: standardised mean differences (SMD) and pooled relative risk (RR) for continuous and dichotomous variables, respectively. Random effects analysis was performed with 95% confidence intervals.

Results: Five trials (four RCTs), comprising of 378 patients with a mean BMI 46.72 kg/m² were included. In comparison with AP, AR was associated with a significantly better 12 month (SMD 0.48, CI 0.13-0.83) and 24 month %EWL (SMD 0.68, CI 0.38-0.99). Overall rates of complication were low in both AR and AP, with 5 staple-line leaks and 9 cases of bleeding requiring re-operation in total. There was no significant difference between the complications rates in AR vs AP, with AR associated with non-significant increase in leak (RR 2.51, CI 0.49-12.82), and bleeding (RR 1.18, CI 0.32-4.19), and with a lower risk of GORD (RR 0.69, CI 0.26-1.82).

Conclusion: In LSG for obesity, antral excision is associated with better weight loss than antral preservation and does not confer a greater risk of complications.

D02
Bioabsorbable staple line reinforcement in laparoscopic sleeve gastrectomy: positive impact on patient, surgeon and NHS
Barney Stephenson, Dharminder Dhillon, Amir Khan, Damikesh Puchooa, Wunnava Venkateshwararao, Salman Mirza
Walsall Healthcare NHS Trust, Walsall, West Midlands, UK
Background: Laparoscopic sleeve gastrectomy (LSG) has become the most frequent bariatric procedure globally. Controversies remain regarding staple line reinforcement (SLR) techniques. We hypothesised that SLR in LSG improved patient outcome.

Methods: A retrospective sequential cohort study was conducted of all LSGs performed by two surgeons in a Level 4 bariatric unit between January 2012 and March 2016, prior to and after the introduction of bioabsorbable SLR (Seamguard®, W.L. Gore, USA). All patients received the same pre- and post-operative fluid management according to unit protocol. Demographic, haematological, transfixion, leak rate, operative time and length of stay data were analysed. Fisher’s Exact Test and two-tailed Welch’s unequal variance t-tests were performed. A p-value of <0.05 was deemed significant.

Results: 323 LSG were performed (non-SLR: SLR, 189:134). There were no differences in age, gender, BMI and pre-operative haemoglobins and haematocrits between the groups. The main findings are tabulated below, presented as mean (SD):  

<table>
<thead>
<tr>
<th></th>
<th>Non-SLR</th>
<th>SLR</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial post-op Hb (g/L)</td>
<td>122.0 ± 16.3</td>
<td>128.0 ± 14.1</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Initial post-op Hct</td>
<td>0.37 ± 0.05</td>
<td>0.39 ± 0.04</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Operative time (mins)</td>
<td>145 (69)</td>
<td>120 (56)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Length of stay (days)</td>
<td>3.0 (1.4)</td>
<td>2.1 (1.0)</td>
<td>.025</td>
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There were no differences between groups for subsequent haemoglobin and haematocrits. Thirteen patients (6-9%) in the non-SLR group required a transfusion compared to no patients in the SLR group (p<.001). Two patients in the non-SLR group returned to theatre for bleeding. There were 2 leaks in the non-SLR group and no leaks with SLR.

Conclusion: Bioabsorbable staple line reinforcement reduces peri-operative bleeding and leaks with the added advantage of reduced patient morbidity, shorter operative time and reduced length of hospital stay.

D03
Unexpected vs planned Intra-Gastric Balloon (IGB) insertion: Outcomes of a bail out strategy in technically demanding bariatric patients
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Background: Intra-gastric balloon (IGB) insertion is a potential tool in the management of patients with extreme BMI as part of two-staged procedure. It can also be of use in patients that unexpected technical difficulties can preclude completion of definitive surgery. We compared the outcomes of planned and unexpected IGB.

Methods: A prospectively collected, single institution database of patients undergoing bariatric surgery was utilised. Patients that either underwent planned or unexpected IGB insertion as part of a two-staged procedure between 2010 and 2015 were selected and the outcomes of the two groups were compared.

Results: A total of 36 patients (67% females) were included in the study. 83% (n = 30) had an IGB as part of a two-staged procedure and 17% (n = 6) had an unexpected IGB insertion. The initial mean BMI was 70.0 ± 10.9 kg/m² for those who had a planned IGB and 59.4 ± 6.0 kg/m² for patients with unexpected IGB insertion. After the removal of the IGB, the BMI was reduced by 7.4 ± 4.6 kg/m² in those with a planned IGB insertion and by 5.9 ± 3.6 kg/m² in patients with unexpected IGB insertion (p = 0.55). There was no statistically significant difference in the final BMI (49.8 ± 8.3 vs 44.2 ± 7.2, p = 0.14) and the % Excess Weight Loss (44.3 ± 14.9 vs 35.6 ± 23.6, p = 0.34) between the two groups were comparable. However, patients who underwent an unexpected IGB insertion had a significantly higher rate of postoperative complications (80% vs 23%, p = 0.012), including 2 leaks in the group with unplanned IGB.

Conclusion: Patients who require IGB insertion due to unexpected technical difficulties have an increased peri-operative complication rate during definitive surgery. This increased rate is not attributable to the presence of the balloon per se.

D04
Band to sleeve or band to bypass: early results from the National Bariatric Surgical Registry
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Background: There is no consensus as to the best revision bariatric operation for patients in whom gastric band has failed to achieve resolution of obesity and associated comorbidities. The two main strategies for patients in this situation are conversion to sleeve gastrectomy or conversion to Roux-en-Y gastric bypass. The aim of this study was to evaluate data from the National Bariatric Surgical Registry (NBSR), a comprehensive, prospectively-collated record of bariatric cases performed in the UK, regarding outcomes following conversion of band to sleeve and band to bypass.

Methods: We interrogated NBSR records from January 2009 to June 2014. Over this time there were recorded 171 cases of band revised to Roux-en-Y gastric bypass (bypass) and 51 of band revised to sleeve gastrectomy (sleeve).
The two groups (bypass and sleeve) were compared. Two-tailed t-tests were used for comparison of continuous variables and chi-square or Fisher’s exact for categorical variables.

Results: Sleeve patients were comparable to bypass patients in terms of pre-operative weight (126kg vs 132 kg; p = 0.33), incidence of diabetes on medication (27% vs 16%; p = 0.27), hypertension (30% vs 37%; p = 0.53) and proportion unable to climb a flight of stairs (30% vs 18%; p = 0.40). Length of follow up was comparable between the groups (69 vs 70 weeks; p = 0.86).

There were no mortalities in either group and no difference in re-operation rate (4% vs 6%; p = 1). There was a non-significant advantage of sleeve over bypass on rates of 30-day readmission (2% vs 8%; p = 0.3). There was no significant difference in mean % excess weight loss in the two groups (sleeve 52% vs bypass 57%; p = 0.41), and no significant difference in resolution of co-morbidities except for hypertension, which was more likely to resolve in patients undergoing bypass (62% vs 14%; p = 0.035).

Conclusion: In this, the largest published dataset of band conversions, early outcomes from both bypass and sleeve are good. There are no significant differences between the two operations in terms of early complications and early weight-loss outcomes.

D05

Inequalities in UK metabolic surgery rates across the obese diabetic population – Time to play fair

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Background: 26% of the England population are obese, while 7-5% are diabetic. Obesity is a major risk factor for diabetes and increases in obesity prevalence foreshadow increases in diabetes. An effective treatment exist, in metabolic surgery, with typically 65% of operated diabetic bariatric patients no longer requiring medication. However less than 1% of eligible obese patients in the UK receive bariatric surgery, with the possibility of a ‘post-code lottery’. This study aimed to assess if there were such regional differences in the availability of surgery.

Methods: Prevalence data on diabetes and the number of bariatric procedures performed in England were taken from Public Health England and from the Health & Social Care Information Centre respectively for 2014/2015. These data were matched by region and local authority. The number of bariatric procedures per 1000 diabetics was calculated and compared. The standard deviation (SD) for this sample was calculated as a measure of spread.

Results: The mean number of bariatric procedures was 2.2 per 1000 diabetic patients with a relatively high SD of 1.9 across all local authorities and 1.7 across regions. The North East region performed the most bariatric procedures per 1000 diabetic patients with a ratio of 6.4 bariatric procedures per 1000 diabetic patients with the East Midlands performed the least (0.8). Even within a region, there was no significant variability.

Conclusion: The highest performing regions carried out almost 3 times more bariatric procedures per diabetic patient than the national average, while the lowest performed less than half. These data show that there is considerable inequality in UK wide availability of metabolic surgery to the diabetic bariatric population, between regions and local authorities – a ‘postcode lottery’. Considering the health benefits of metabolic surgery, we should aim to ensure equity for all patients.

D06

Histo-pathological examination (HPE) of resected stomach post laparoscopic sleeve gastrectomy (LSG): Is it worth the time and money?

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Background: Mounting evidence recommends discontinuing routine HPE of surgical specimens like gall bladder and appendix. Recent evidence also questions routine HPE of resected stomach post LSG. We aimed to assess if the practice of routine HPE of resected specimens could be justified clinically and financially.

Methods: A prospectively maintained single surgeon LSG database from 2007-present incorporating 1207 patients was analyzed and HPE data retrieved. The frequency and clinical relevance of incidentally detected pathologies was analyzed, and cost analysis performed.

Results: There were 855 (71%) females. Mean (standard deviation (SD)) age was 40-43 (11-69) years. Mean (SD) BMI was 45 (7-47). 389 (33%) resected stomachs were normal on HPE. Chronic gastritis was seen in 742 (62%) patients with a fifth showing H Pylori (151). Other findings included cystic fundic gland polyps (17%), Intestinal metaplasia (5-04%), and hyperplastic polyps, erosive gastritis and small incidental GIST’s (largest size 18 mm) in 4 (0-33%) specimens each. Autoimmune gastritis, calcifying fibrous tumour, drug induced ulcer, benign gastric tumour, neuroendocrine tumour and granulomatous inflammation were seen in one specimen each. HPE costs USD 78 per sleeve on an average. We estimate a cost of USD 4-67 million on HPE alone to diagnose one potential case of gastric cancer, not including endoscopic and clinical follow up costs.

Conclusion: HPE is expensive and incidental significant findings altering clinical management are very rare. Except for high risk patients based on age and ethnicity, routine HPE of resected sleeve is unnecessarily clinically. This can lead to significant financial savings.
D08

Staple line reinforcement in laparoscopic sleeve gastrectomy: 1863 cases from the National Bariatric Surgical Registry
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Background: Serious early complications of sleeve gastrectomy include staple line leak or bleed. Staple line reinforcement, or buttressing, has been proposed to decrease the risk of these complications. To date, trials comparing rates of bleed and leak with or without staple line reinforcement (SLR) have involved small numbers of patients and have had conflicting results.

The aim of this study was to interrogate the National Bariatric Surgical Registry (NBSR) for the use of SLR and to analyse association of SLR with post-operative complications.

Methods: The NBSR is a comprehensive, prospectively-collated record of bariatric cases performed in the UK. We assessed 6500 cases of primary laparoscopic sleeve gastrectomy performed between January 2009 and June 2014, and included all patients with recorded presence or absence of SLR and details of at least one follow-up visit in our analysis. Two-sided Fisher’s exact test was used to compare categorical outcomes.

Results: Of 1863 cases eligible for inclusion, 1222 (62\%\) had reinforced staple lines and 741 (37.7\%) did not. Biocompatible glycolide copolymer (BGC) was the most common type of buttressing (n = 771; 63\%), followed by suturing (n = 294; 24\%). There was no significant difference in complication rate between cases with SLR and those without. Incidence of bleeding requiring transfusion or re-operation was equal in the two groups (1.2\% vs 1.2\%; p = 1.00), while incidence of staple-line leak was non-significantly lower in the SLR group (0.5\% vs 1.1\%; p = 0.17). Type of reinforcement (tubed, BGC or bovine) did not confer any significant difference in rate of bleed or leak.

Conclusion: In this, the largest study of a single dataset to examine effect of SLR on rates of staple-line leak and bleed after sleeve gastrectomy, presence of SLR was not associated with a change in rate of either complication.

D09

Endoscopic Stent Placement for Leak after Gastric Surgery: Long Term Outcomes
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Background: Leak from the gastric pouch after gastric bypass occurs in approximately 2\% of patients and represent a significant management challenge. Endoscopic management of post-bypass leak in the form of stent placement has become increasingly employed as a means of controlling the leak to allow tissue healing. Given the relatively novel nature of this management strategy, evidence supporting its use, particularly in the longer term, is lacking with low reporting of long term outcomes. We analysed the medium and long term outcomes in a cohort of patients who had endoscopic stent placement for control of leak after gastric bypass.

Methods: Details of all patients undergoing bariatric surgery at our institution are prospectively recorded in a database. This database was interrogated to identify all patients having gastric bypass between April 2009 and November 2010. The patients developing leak with subsequent endoscopic stent placement were identified from this cohort and pre-operative demographics, co-morbidities and weight parameters recorded as were details of stent placement and removal, stent related complications and weight parameters at one year and at most recent follow-up.

Results: We identified ten patients who had endoscopic stenting for control of post-bypass leak. Stents were placed for confirmed leaks at median 1.5 days post-operatively (range 0–20) and on average removed after 57 days. Successful endoscopic removal was possible in eight cases. Four patients had problems with pain relating to their stent, one patient suffered stent migration, one patient developed ulceration at the stent site and one patient had an oesophagael mucosal degloving injury on stent removal requiring prolonged hospital stay. One patient died 218 days after surgery secondary to complications of leak. Mean excess body weight loss (EBWL) at one year for this patient cohort was 66.6\% and at longer term follow-up (mean 3.6 years: range 1.8–5.0 years) the mean EBWL was 58.2\%.

Conclusion: Whilst longer term weight outcomes are good following endoscopic stent placement for leak after gastric bypass, the procedure does have a high morbidity burden largely related to pain from the stent as well as stent migration and difficulties in retrieval.

Posters

Posters of Distinction

POD1

Single Incision Laparoscopic Cholecystectomy in Relation to Patient Body Mass Index: An Outcome Comparison
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Background: Laparoscopic cholecystectomy (LC) has traditionally been performed using four ports. Single-incision laparoscopic surgery has emerged as an alternative technique to improve cosmesis and minimize complications associated with multiple incisions. Previous studies however, have demonstrated prolonged operative time, increased use of additional ports and higher wound complication rates in obese patients. This study was designed to evaluate differences in operative outcomes between obese and non-obese patients after single incision LC (SILC).

Methods: A retrospective study of all patients who underwent SILC by a single surgeon from May 2009 to October 2015. Patients were divided into 2 groups according to body mass index (group A: BMI <30, group B: BMI ≥30). The Mann–Whitney U and χ2 tests were used for statistical analysis. Statistical significance was set at p <0.05.

Results: A total of 618 LCs were performed in the study period of which 258 were performed as a SILC. There were 154 patients in group A and 104 patients in group B. The median age was 43 (18–78) vs. 44 (16–76) years in groups A and B respectively (p = 0.54). The median BMI was 26 (18–29.8) vs. 34 (30–50) kg/m2 in groups A and B respectively (p = 0.0). There were no statistically significant differences between both groups in gender, ASA, mode of presentation, indication, intra-operative and post-operative complications and 30-day readmission. 1 bile leak was recorded in each group, both very early in the series, of which 1 required laparoscopic washout and both required an ERCP. No mortalities were recorded. There were no conversions to open or standard LC. The median operative time was 38 (14–90) vs. 40 (12–105) minutes in groups A and B respectively (p = 0.22). Three patients in group A required an additional port, of which one was the second patient in the series and the other two bled from the cystic artery due to clip failure. In group B an additional port was needed to aid with gallbladder traction in the first patient of this series (p = 0.65). Length of stay was 0 (0–8) vs. 0 (0–3) days in groups A and B respectively (p = 0.37).

Conclusion: SILC is equally safe in both obese and non-obese patients with no statistically significant differences in operative time and post-operative outcomes.
POD2
Patterns of management for Oesophageal Squamous cell cancers in England and Wales
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Background: For mid/lower oesophageal squamous cell cancers (SCC), either surgery or chemoradiotherapy are potential curative treatment options. We investigated changing management for oesophageal SCGs in England and Wales, and associated outcomes.

Methods: This study used data from National O-G Cancer Audit, comparing patients diagnosed with mid/lower oesophageal SCGs between Apr 2008 and Mar 2009 with those diagnosed five years later (Apr 2013 and Mar 2014). Outcomes included the proportion of patients managed with curative intent, curative treatment modality.

Results: 3805 (20.4%) of the 18629 oesophageal cancers were SCGs, with 3217 (85%) of these affecting the mid/lower oesophagus. There was no significant change in the proportion of patients managed with curative intent (33.7% vs 35.9%, p = 0.20). However, there was a small increased in the proportion of patients age ≥70 years at diagnosis with a performance status of ≥2 managed with curative intent in 2013 (10.8% vs 6.3%, p = 0.046). The proportion of patients treated with definitive oncology increased substantially between 2008 and 2013 (52.6% to 48.4%), while there was a corresponding decline in the use of surgery (65.7% to 49.0%).

Conclusion: While the overall proportion of patients managed with curative intent did not change, there was a rise in the proportion of older frail patients managed with curative intent. This may reflect the increased use of definitive oncology in preference to surgery.

POD3
Outcomes following liver resection for ruptured and non-ruptured hepatocellular carcinoma – a propensity matched analysis
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Background: Prognosis for ruptured hepatocellular carcinoma (HCC) is thought to be inferior to non-ruptured tumours due to multiple factors including advanced disease, high incidence of background cirrhosis and peritoneal seeding of the tumour. The aim of this study was to assess the effect of rupture as a potential adverse prognostic indicator among patients with HCC that undergo resection.

Methods: Patients that underwent resection for ruptured HCC (group A) were identified from a prospectively collected hospital database of HCC patients between 2005 and 2015. These subjects were matched with non-ruptured HCC (group B) patients using a propensity score based on logistic regression analysis. Covariates included age, cirrhosis, size, multifocality, vascular invasion, extrahepatic disease, AFP, background liver function and type of resection. Survival was compared using a Kaplan-Meier estimate with log-rank test.

Results: Fifteen subjects in group A (8 male; 7 female, mean age: 56.9 ± 17.2) underwent hepatectomy as definitive treatment (7 major hepatectomy, 8 minor hepatectomy) and were similarly matched for study characteristics with group B. The mean follow up period for group A and B was 45 and 39 months, respectively. Within the study population 27% of patients had moderate fibrosis, 23% severe fibrosis and 13% had cirrhosis confirmed by histology. The 3-year and 5-year survival for ruptured and non-ruptured HCC were 83% and 39% vs. 84% and 84%, respectively for group A and B. There was no difference in the overall survival (78.3 vs 99 months, p = 0.347) or disease-free survival (60.8 vs 38.4 months, p = 0.97) between the two groups.

Conclusion: In this propensity-matched comparative study, rupture was not a prognostic factor for patients with HCC who underwent liver resection.

POD4
The utility of drain fluid amylase measurement on day 1 after distal pancreatectomy
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Background: The ability to identify patients at low risk of pancreatic fistula may facilitate early drain removal in patients undergoing distal pancreatectomy. The purpose of this study was to assess the relationship between drain fluid amylase on the first post-operative day (DFA1) and the development of pancreatic fistula (PF).

Methods: A retrospective review was conducted on patients who underwent distal pancreatectomy between Jan 2010 to Jan 2016. Amylase concentrations in the drain was measured on the first post-operative day. Pancreatic fistulas were classified according to the International Study Group on Pancreatic fistula. A cut off of DFA1 was derived which yielded sensitivity and negative predictive value of 100% for predicting PF.

Results: A total of 138 patients underwent distal pancreatectomy in the study period. DFA1 was measured in 40 patients. The primary indication for surgery was adenocarcinoma (12), neuroendocrine tumour (11), mucinous cystic neoplasm (4), chronic pancreatitis (4) and other cause (9). Nineteen PFs were diagnosed (Grade A – 15, Grade B- 3, Grade C-1). The DFA1 was significantly higher in those who developed a pancreatic fistula (5473; range 613–28450) compared those without (802; range 57–2310). P<0.001 **. Receiver operating characteristics curve identified a cut off value of DFA1 of 600 which excluded PF with a sensitivity of 100%. AUC=0.89 (95% CI: 0.796-0.98, p<0.01)

Conclusion: This study indicates that DFA1 has a role in predicting patients who are at low risk of developing PF following distal pancreatectomy. This can identify patients in whom it is safe to facilitate early drain removal.

POD5
Surgical management and outcomes of bariatric surgery in the extremely obese patients (BMI ≥ 70 kg/m2): Challenging the limits of bariatric surgery
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Background: Bariatric surgery has been established as the most effective long-term treatment for morbid obesity. Patients with a body mass index (BMI) of ≥ 70 kg/m2 pose a particular surgical challenge. We prospectively evaluated the outcomes in this cohort.

Methods: A prospectively collected, single institution database of patients undergoing bariatric surgery was utilised. Patients with a BMI ≥ 70 kg/m2, who underwent a bariatric surgical procedure between 2009 and 2014 were identified and the feasibility and outcomes of bariatric surgery were analysed.

Results: During the study period, 18 patients with a BMI ≥ 70 kg/m2, were treated at our institution. The initial mean BMI of the cohort was 77.9 ± 1.7 kg/m2 with a mean follow up period of 25.6±6.2 months. All patients underwent a laparoscopic sleeve gastrectomy (LSG). In 17 (94%) an intra-gastric balloon (IGB) was used as a bridging procedure prior to definitive surgery and 2 (11%) of these patients required a second IGB inserted. There were no operative mortality and no leaks. During the follow up period, the % Excess Weight Loss was 42 ± 2.1 and the mean BMI of the cohort reduced to 44.1 ± 2.1 kg/m2. 2 (11%) patients underwent a Roux en Y Gastric Bypass (RYGB) after the SLG due to inadequate weight loss.
**Conclusion:** Bariatric surgery is feasible and safe in the extremely obese patients (BMI ≥ 70 kg/m²), with excellent perioperative outcomes and good medium term results.

**POD6**

Multivariate analysis of disease related factors influencing long-term survival after resection of adenocarcinoma of the head vs. body/tail of pancreas

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**Background:** Ductal adenocarcinoma (DAC) of the distal pancreas (DP) is considered to have worse prognosis compared to that of the head of the pancreas (HoP). The aim of this study is to evaluate the differences in the histopathological characteristics between the two groups (head vs. distal pancreas) and to assess the influence of these factors on the overall survival following resection of the tumour.

**Methods:** Patients who underwent resection of HoP lesions and DP lesions for PDAC at our institution between 2004 and 2014 were included. Pathological characteristics between the two groups were compared. Univariable and multi-variable (Cox regression) analyses were performed to identify the disease related factors that could influence patient survival.

**Results:** Three hundred and eight patients were treated for DAC. 279 (90%) with HoP lesions and 29 (10%) with DP lesions. Patients with DP lesions were found to have significantly larger lesions (p<0.001) than the HoP group. However, HoP lesions had significantly higher T-staging (p<0.001), with a greater number of total (p<0.001) and positive (p<0.007) lymph nodes. Lymph node ratio was similar in the two groups (median 0.2 in both, p=0.538). Despite the differences in disease related factors, the survival in the two groups was similar (p=0.597). Tumour size (p=0.005), margin status (p=0.040), nodal status (p=0.001) and increasing number of positive lymph nodes (p<0.001) were significantly associated with survival in univariable analysis. Tumour size (p=0.040) and number of positive lymph nodes (p=0.001) remained to be independent predictors of overall patient survival on multivariable analysis.

**Conclusion:** Patients with resectable DAC located in the DP have a similar overall and recurrence free survival despite the lesions being larger when compared to patients with resectable tumors located in the HoP.

**POD7**

Enhanceddietetic support - improving nutritional & clinical outcomes in oesophago-gastro (OG) cancer surgery

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**Background:** The incidence of malnutrition amongst oesophago-gastric (OG) cancer is high (50-80%). Significant weight loss, dysphagia, early satiety and regurgitation frequently limit dietary quantity and quality. Neoadjuvant treatment may further increase nutritional risk. Surgery inflicts metabolic stress in addition to the physical and psychological challenges of re-establishing nutritionally adequate diet, such that individuals can expect to lose ≥10% body weight post-operatively. Dietitians are a core member of the OG cancer MDT – in March 2014 additional funding enabled increased dietetic service to OG cancer surgery. This study aimed to evaluate the impact of this enhanced dietetic resource on nutritional and clinical outcomes.

**Methods:** Retrospective review of dietetic and medical records for all patients undergoing oesophagectomy or gastrectomy for OG cancer and receiving ‘standard dietetic care’ (SDC) 18 months prior to the ‘enhanced dietetic service’ (EDS) was completed. Primary data included weight change from diagnosis to surgery and from surgery to 1, 2, 6 and 12-month post-op intervals. Secondary data included feeding routes, length of stay, adjuvant treatment rates, recurrence and mortality within one year. The review was repeated for patients receiving EDS between March 2014–15. Results were compared (rmANOVA).

**Results:** 44 patients received SDC and 61 EDS on repeat evaluation. Exclusions included benign resection and non-curative procedures. Age, gender and type of surgery were similar for both groups, whilst neoadjuvant treatment reduced for the EDS group, whilst fewer EDS patients received neoadjuvant treatment. Enteral tube feeding increased both pre- and post-operatively. Mean weight loss from diagnosis to surgery reduced by 1%. Mean weight loss from surgery to all post-operative follow-up intervals was reduced, – rmANOVA (diagnosis weight as covariate) showed 4.6kg reduction in weight loss at 12 months in the EDS group (p<0.047) suggesting a trend towards earlier weight stability. There was significant reduction in length of stay (p=0.05), adjuvant treatment, and 12-month readmission, recurrence and mortality on comparison.

**Conclusion:** Enhanced dietetic input, targeted through the treatment pathway of OG cancer surgery patients, improves nutritional outcomes within the first post-operative year. Further work is required to support the positive impact on clinical outcomes found in this study.

**POD8**

Does second surgery in T1b/T2 gallbladder cancer offer any survival benefit?

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**Introduction:** Incidental T1b and T2 gallbladder cancers are often managed with further resection as a completion procedure. This retrospective study is aimed at assessing the influence of second resection on overall survival amongst patients diagnosed with incidental gallbladder cancer.

**Methods:** Patients undergoing a surgical resection at a western tertiary referral centre between 1994 and 2014 were identified. Data including type of surgery, histological diagnosis, staging, post-operative morbidity, mortality, overall survival were recorded. Survival outcomes were analysed using the Kaplan-Meier method.

**Results:** A total of fifty six patients underwent surgery for gallbladder cancer of which 22 patients had further resection following incidental diagnosis of T1b and T2 gallbladder cancer at initial cholecystectomy: 18 underwent a segment 4/5 resection; 4 patients underwent a major liver resection and 9 patients underwent palliative surgery: 11/22 patients (50 %) exhibited residual disease after pathological assessment of the resection specimen. Residual disease was located at various locations including lymph nodes and/or gallbladder bed. The presence of residual disease at second surgery (p=0.025) was a negative predictor of overall survival. Median survival in patients identified with residual disease was similar to patients undergoing palliative management (12 months and 12 months respectively). However median survival was not reached in patients with no residual disease.

**Conclusion:** The presence of residual disease following a completion procedure is associated with poor overall prognosis. Second resection in patients with T1b or T2 disease informs disease staging but it remains questionable whether secondary surgery offers any survival advantage.

**POD9**

Laparoscopic fundoplication is effective in the treatment of patients with laryngopharyngeal reflux

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**Background:** Although evidence is mounting, the role of laparoscopic fundoplication (LF) in the treatment of patients with laryngo-pharyngeal reflux (LPR) remains controversial. The purpose of this study is to critically analyse the clinical outcomes from a single surgeon series in patients undergoing LF for LPR symptoms.

**Methods:** A prospectively maintained database was used to identify 251 patients who underwent LF for LPR symptoms between 2010 and 2015.
Complete data was available for 181 patients who were included in the study. All patients underwent preoperative endoscopy, ambulatory pH study, high resolution manometry and upper gastrointestinal scintigraphy prior to surgery. During preoperative and post-operative visits, patients independently completed GI QOL (gastrointestinal quality of life), Visik, dysphagia, and LPR scores. SPSS 22 was used for statistical analysis.

Results: 58% patients were females. Two-thirds of patients (67%) had pure LPR symptoms. Mean BMI for the group was 25.6 +/− 8.47. 61% of patients reported a statistically significant improvement in their GIQOL (median 94 vs. 103, p = 0.001). Visik score improved in 67% of patients (median 3 vs. 2, p = 0.001) and LPR score improved in 71% of patients (median 25 vs. 15, p = 0.001). 55% patients reported a significantly worse dysphagia symptom score following surgery (median 37 vs. 33, p = 0.001).

Conclusion: LF is effective in relieving symptoms of LPR in a carefully selected patient population. Benefits have to be balanced against a higher risk of complications of dysphagia and appropriate patient counselling is important.

POD10

Mini – ALPPS achieves adequate Future Liver Remnant (FLR) Hypertrophy to allow safe 2 stage liver resection
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Background: Associating Liver Partition and Portal Vein Ligation for Staged Hepatectomy (ALPPS) for patients with otherwise unresectable disease has generated controversy due to high morbidity and mortality with unproven long term outcomes. We present our series of patients with parenchymal transection limited to 30-40% (MINI-ALPPS).

Methods: Patients who had MINI-ALPPS between April 2015 and April 2016 were included. All would have been inoperable due to inadequate FLR. For 6 patients with colorectal liver metastases (CRC) the FLR was cleared with metastasectomies and all patients had the liver divided along the future line of transection to 30-40%. The Right portal vein was stapled and divided without extensive hilar dissection. In Stage1, there was minimal handling of right liver which was not mobilised and the middle hepatic vein was preserved. Data was collected prospectively looking specifically at hypertrophy of the FLR and morbidity and mortality.

Results: There were 8 patients (Age 25-68, 6 with CRC and 2 with hilar cholangiocarcinoma. 1 patient with cholangiocarcinoma had portal vein embolisation, but then proceeded to MINI-ALPPS. All patients completed two stages with adequate FLR hypertrophy at a median of 30 days. There was no mortality. After Stage 1 resection 1 patient had bile leak and 1 patient required a laparotomy for infected collections. After Stage 2 resection, 1 patient developed liver failure and 2 patients had bile leaks. Median length of stay after Stage 1 and 2 were 9 and 6.6 days respectively. All patients had CT scan to assess FLR volume prior to Stage 2. In 6/8 patients function of the FLR was also analysed with a GIQOL (gastrointestinal quality of life), Visik, dysphagia, and LPR scores. SPSS 22 was used for statistical analysis.

Conclusion: MINI-ALPPS with a limited transection of 30-40% appears to achieve adequate level of hypertrophy in order to proceed to the second stage of the operation with low morbidity and no mortality. The longer interval between the two stages was due to logistics but may also be contributory to the good outcomes. This did not lead to progression of disease during the interval as has happened with two stage hepatectomies. We feel it is worth pursuing this strategy for patients with otherwise inoperable disease.

POD11

A National Audit for Anti-Reflux Surgery - Should it be Based Primarily on HES Data?
Rebecca Varley, Benjamin Monaghan, Bilal Alkhaffaf
Central Manchester University Hospitals NHS Foundation Trust, Manchester, UK

Background: National audits can lead to quality improvements by providing national standards against which the performance of local units can be compared. AUGIS & ALGBI are developing the Surgical Workload Outcomes Audit Database (SWORD), which initially will focus on anti-reflux surgery, cholecystectomy and hernia surgery. Data will be entirely extracted from Hospital Episodes Statistics (HES) – an administrative data warehouse designed ‘for non-clinical purposes’. If inaccurate, the use of HES data would introduce significant bias and produce unreliable results. Other similar initiatives have subsequently been used to report surgeon-level outcomes. This study aims to scrutinise the accuracy of HES data when examining outcomes for anti-reflux surgery.

Methods: This was a retrospective analysis of adults undergoing elective primary and redo anti-reflux surgery between January 2007 and August 2015. Para-oesophageal hernias and non-elective admissions were excluded. ‘Coded’ patients were identified using codes described in SWORD’s Technical Guidance VI-0 and compared to patients from a prospective unit database. Pre-defined outcomes set-out by SWORD were used to compare both groups.

Results: Hospital coding identified 95 cases compared to 127 from the unit database. 11 ‘coded’ patients should have been excluded from analysis (paediatric cases, para-oesophageal hernias and non-surgical patients). For both groups were as follows (‘coded’ patients/unit database): activity volume n = 95/127. Mean length of stay (days) 1-3/1-9, 2/7/30 day readmission rates (%) 0.61/0.79, 5.47/3.94 and 13/0.8/3.87 respectively. Return to theatre within 30 days (%) 0/0/1.57. Day case rate (%) 0.63/2.56 and short stay rate (%) 34/15/39.100% of cases were laparoscopic with a 0% rate of conversion to open in both patient sets. Rate of recurrent fundoplication (%) 0/0/15.75.

Conclusion: In our study, HES data underestimates a significant number of primary and redo anti-reflux cases and includes patients who should be excluded from analysis. We believe that a database created entirely on HES data would produce unreliable outputs and would therefore be open to criticism. Whilst such initiatives should be supported, other approaches to maximise data accuracy are required.

POD12

Prognostic Factors of Cholangiocarcinoma: A 11 Year Single Centre Experience in Birmingham
Sivesh Kathir Kamarajah1, Ricky Bhogal1, Chris Coldham1, Chris Weston1, Darius Mirza2
1University of Birmingham, Birmingham, UK, 2Queen Elizabeth Hospital Birmingham, Birmingham, UK

Background: Survival of patients with cholangiocarcinoma (CCA) is often poor with 5-year survival of intrahepatic, hilar, and distal CCA ranging between 17%-40%, 9%-35%, and 20%-37% respectively. Variation in survival is often due to advanced stage at presentation, limiting management options to surgical resection or palliative treatment. We aimed to assess long-term survival and prognostic factors in a large series of patients with biliary tract cancer.

Methods: We carried out a retrospective analysis of patients operated for intrahepatic, hilar and distal CCA from January 2005 until January 2016 in Queen Elizabeth Hospital Birmingham (QEH). Recorded data included demographics, medical history, presenting symptoms, and radiographic and clinical tumour data. Patients with bile duct cancer treated non-operatively and those who underwent liver transplantation as primary therapy were excluded. Diagnosis was confirmed through post-operative histology. Kaplan-Meier curves were plotted and log rank tests used to compare time from operation to death. Cox proportional hazards models developed by stepwise regression were used to identify predictive factors of overall survival.

Results: We identified 313 patients, 72 (23%) had intrahepatic, 70 (22%) hilar, and 171 (54%) had distal tumours. 219/313 (69.9%) had solitary tumours; 15/313 (4.8%) had metastatic disease, and 79 (24.9%) had multifocal disease. 175 (56%) patients’ underwent surgical resection with curative intent, the remainder undergoing palliative surgery. Median age was 65years (22-85), 60years (24-84), and 68years (21-88) for intrahepatic, hilar and distal CCA respectively. Most common presenting symptom was jaundice (17/313 (54.7%) patients). Median overall survival for intrahepatic, hilar and distal CCA were 28 months, 13 months, and 15 months respectively. In log rank analysis, survival was significantly higher for solitary tumours (p<0.0001), R0 resection (p<0.0001), absent perineural
invasion ($p=0.022$), no local invasion ($p<0.0001$), and negative nodal status ($p<0.0001$). In Cox regression analysis, multifocal tumours (HR: 2.91; 95% CI: 1.66 – 5.09; $p<0.0001$), positive resection margin (HR: 2.67; 95% CI: 1.32 – 5.37; $p=0.006$), perineural invasion (HR: 2.67; 95% CI: 1.12 – 2.31, $p=0.010$) and nodal involvement (HR: 1.65; 95% CI: 1.18 – 2.29, $p=0.003$) were found to be strongest negative prognostic factors. In those undergoing R0 surgical resection (n = 155), nodal involvement remains strongest predictor of overall survival ($p=0.013$) and progression free survival ($p=0.034$).

**Conclusion:** In this single centre experience of managing cholangiocarcinoma, we identified four significant prognostic factors for overall survival. Future work should aim to validate our findings and develop risk scores to stratify patients for further adjuvant therapy following surgery.

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### Posters

#### Bariatric

**P13**

**The impact of standardised typed operation notes on information recording, clinical coding and remuneration in bariatric surgery**

Jihene El Kafai, Chris Middlemass, Richard Gillies

Oxford University Hospitals NHS Foundation Trust, Oxford, UK

**Background:** There is a noticeable variability in information recording and legibility in non-standardised handwritten operation notes, with potential repercussions for post-operative care, clinical coding and hospital income. We aim to determine if introducing standardised typed notes on bariatric surgery can improve quality of data recorded, coding and income.

**Methods:** Prospective study comparing consecutive operation notes before and after the introduction of standardised typed templates for Laparoscopic Roux-en-Y Gastric Bypass (LRYGB) and Sleeve Gastroctomy (LSG) in August 2015. Typed operation notes consisted of pre-populated fields for common additional procedures and comorbidities, allowing surgeons to delete non-applicable fields. Information on patient demographics, primary operation, additional procedures and comorbidities was recorded. Diagnosis and procedure codes were procured through the clinical coding office, as were the Health Resource Group (HRG) tariffs used to determine income.

**Results:** Between March 2015 and March 2016, 59 patients underwent a LRYGB or a LSG in our unit; 4 had revisational procedures. 31 operation notes were typed and recorded at the clinic, 26 were handwritten (3 had revisational procedures). With typed notes, $5$ comorbidities were recorded in typed operation notes compared with $3.5$ for handwritten notes; $3$ or more comorbidities was recorded in $28/31$ (90%) typed notes compared with $20/28$ (71%) handwritten notes ($p<0.06776$). A tariff uplift of £1969.70 for comorbidities was received for $23/31$ (74%) typed notes compared with only $8/28$ (29%) handwritten notes ($p=0.000458$). Operations with typed notes were remunerated at a median of £7871.85 compared with £5902 with $20/28$ (71%) handwritten notes ($p<0.0001$), peritoneal invasion ($p=0.006$), perineural invasion ($p=0.010$) and nodal involvement ($p=0.003$) were found to be strongest negative prognostic factors. In those undergoing R0 surgical resection (n = 155), nodal involvement remains strongest predictor of overall survival ($p=0.013$) and progression free survival ($p=0.034$).

**Conclusion:** In this single centre experience of managing cholangiocarcinoma, we identified four significant prognostic factors for overall survival. Future work should aim to validate our findings and develop risk scores to stratify patients for further adjuvant therapy following surgery.

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### Table

<table>
<thead>
<tr>
<th></th>
<th>Cost Per Bariatric Grouping (£)</th>
<th>Total cost over 2yr f/up per person (£)</th>
<th>Saving over 2yr f/up per person if BOMSS adopted (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-op LRYGB</td>
<td>139</td>
<td>975</td>
<td>304</td>
</tr>
<tr>
<td>Sleeve LRYGB</td>
<td>109</td>
<td>109</td>
<td>491</td>
</tr>
<tr>
<td>Band LRYGB</td>
<td>109</td>
<td>5</td>
<td>706</td>
</tr>
</tbody>
</table>

**Conclusion:** The current routine blood monitoring is repeated more frequently than the recommendations from BOMSS. This results in a higher cost per patient when compared to the projected costs if BOMSS guidelines were followed. If the BOMSS recommendations were followed this would result in £4671 savings per year, reducing the cost would reduce to £13,973. A cost saving of £20,212 (39%). Therefore, adopting BOMSS guidelines will result in a significant cost saving for the Trust.

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**P15**

**Oesophageal dysmotility after gastric band surgery: Are we consenting patients...??**

Ahmed Abdelrahman, Ana Elshaw, Amir Khan, Kashif Halim, Salman Mirza

Manor Hospital, Birmingham, UK

**Background:** Laparoscopic gastric band (LAGB) is an established treatment modality for morbid obesity. Band slippage, migration (erosion), port and tubing complications are commonly discussed with patients, however, the likelihood of developing dysmotility may not be routinely considered.

**Methods:** A retrospective analysis of patients who had undergone LAGB at our Level 4 bariatric centre between 2005 and 2015. Basic demographic details were collected along with onset of symptoms suggestive of oesophageal dysmotility and 24 hour oesophageal pH & manometric results. Furthermore, consent forms were also reviewed.

**Results:** 250 patients underwent LAGB, 17 patients (15 female, 2 male) with median age 47(range 39–53) were identified with dysmotility based on their symptoms and on oesophageal manometry. Main symptoms were acid reflux (41%), dysphagia (41%) or both (11%). Other findings are tabulated below.

**Table:**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (kg) at onset of symptoms</td>
<td>85-4</td>
<td>58-4–162.2</td>
</tr>
<tr>
<td>Onset of symptoms (years) after LAGB</td>
<td>4</td>
<td>1–10</td>
</tr>
<tr>
<td>Lower oesophageal sphincter (LOS) pressure (6-8-21.0 mmHg)</td>
<td>11.3</td>
<td>4-6–29.6</td>
</tr>
<tr>
<td>DeMeester score &lt; 14.72</td>
<td>11.9</td>
<td>13.1–158.8</td>
</tr>
</tbody>
</table>
Resting lower oesophageal sphincter (LOS) pressure was abnormal in 7 patients. In 43% of symptomatic patients, the LOS failed to relax upon swallowing despite resting pressure being in the normal range. A review of the consent form showed that none of the patients were informed about oesophageal dysmotility as a complication.

**Conclusion:** Results indicate that oesophageal dysmotility after LAGB is not routinely discussed and patients should be informed during the consent process.

### P16

**Copper and Zinc Levels in Patients before and after Gastric Bypass Surgery – Is monitoring required?**

Lewis Stevens¹, Sophie Lightbody¹, Tejal Magan¹, Roshi Mistry¹, Mohammad Howlader², Ali Alhamdani², Pratik Sufi², Omar Khan²

¹Whittington Hospital, London, UK; ²St George’s Hospital, London, UK

**Background:** Abnormalities of serum levels of trace metals such as copper and zinc have been identified in obese individuals. Further to this, all bariatric procedures alter micronutrient uptake with gastric bypass, duodenal switch and bilio-pancreatic diversion having the greatest effect. Guidelines regarding micronutrient monitoring in bariatric patients have been produced but the study data assessing trace metal levels in the obese population is sparse. Our study aims to demonstrate the incidence of pre- and post-operative trace metal abnormalities in the bariatric patient population.

**Methods:** A prospectively maintained database of all patients undergoing bariatric surgery at our institution was interrogated to identify patients having surgery between February 2010 and March 2013 and provide demographic data, co-morbidities and weight characteristics. The electronic pathology reporting system was then used to identify those patients having pre- and post-operative monitoring of zinc and copper serum levels to show the incidence of trace metal abnormalities before and after gastric bypass.

**Results:** In the defined time period, 304 patients underwent gastric bypass. Of these the majority had serum zinc tested before and after surgery whilst a smaller number had serum copper levels analysed. The results are summarised below:

<table>
<thead>
<tr>
<th>Trace Metal (Normal)</th>
<th>Pre-Operative</th>
<th>Post-Operative</th>
<th>Mean Days Post-Op (SEM)</th>
<th>High</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tested</td>
<td>High</td>
<td>Low</td>
<td>Tested</td>
<td>High</td>
</tr>
<tr>
<td>Zinc (11-18 μmol)</td>
<td>221</td>
<td>16</td>
<td>60 (7%)</td>
<td>276</td>
<td>226.9</td>
</tr>
<tr>
<td>Copper (11-22 μmol)</td>
<td>2</td>
<td>1</td>
<td>0 (50%)</td>
<td>72</td>
<td>662.8</td>
</tr>
</tbody>
</table>

**Conclusion:** Pre-operative zinc deficiency is common in the obese population and becomes more common after gastric bypass. Abnormalities of serum copper levels are also common after gastric bypass. Our data supports routine pre- and post-operative monitoring of serum trace metals in patients undergoing gastric bypass.

### P17

**Predicting Weight Loss after Bariatric Surgery: A Statistical Model**

Aruna Munasinghe, Alistair Sharples, Christine Macano, Bridie Cornes, Nagammapurudal Balaji, Vittal Rao, Chandra Cheruvu

University Hospital of North Staffordshire, Stoke-On-Trent, UK

**Background:** Despite standardised surgical approaches, there is much variability in the reported weight loss achieved by patients. The objective of this observational study was to develop an statistical model to help predict estimated weight loss at 12 months following surgery.

**Methods:** Patients referred to a high volume regional centre who underwent either Roux-en-Y gastric bypass (RYGB) or sleeve gastrectomy (SG) between January 2014 and December 2014 were followed by multidisciplinary assessment from the time of surgery for up to 12 months. Data were collected on patient demographics, comorbidity and follow up weight.

**Results:** 110 (78%) RYGB and 31 (22%) SG operations were carried out. Median preoperative Body Mass Index (BMI) was 44.9 (range 33.8-80.6). Follow up visits were conducted at median intervals of 16 days, 171 days and 315 days following surgery. Median excess weight loss was 25.5%, 39.5% and 49.3%, respectively. Multivariable regression analysis of factors predicting greater than 50% excess weight loss at 12 months were younger age group (OR 0.31; 95% CI 0.10-0.95, P = 0.04 for ages 40–60; OR 0.17; 95% CI, 0.03-0.87, P = 0.03 for age >60; reference age <40), lower preoperative BMI (OR 0.30; 95% CI, 0.10-0.87, P = 0.03 for BMI 25–60; OR 0.04; 95% CI 0.00-0.5, P = 0.01 for BMI >60; reference BMI <45) and non diabetic patients (OR 0.30; 95% CI, 0.10-0.86, P = 0.03).

**Conclusion:** Predictive models for estimated weight loss may be beneficial to help case selection as well as inform patients contemplating obesity surgery. Further longitudinal studies are required to examine maintenance of weight loss over greater time periods where further divergent trends between the two operative approaches may be observed.
Intractable vomiting, stated by Talepour et al., was managed with laparoscopic replication and loosening of the suture near the pylorus, as it was tension on the gastric outlet which triggered the vomiting. One case involved adhesions between the liver and the angle of his, and, again, laparoscopic reoperation 8 months later with suture removal, which resolved the issue.

There are many points to consider from this case; we need more studies looking into gastric plication - preferably RCTs - and further study into the management of post-operative complications employed following the surgery. In addition review of the systems for referral to bariatric surgery when all alternatives have been exhausted, needs to be analysed.[1,2]

References:

Posters

**P19**

**Hepato Pancreato Biliary**

**Survival after Repeat Hepatectomy for Colorectal Liver Metastases – the effect of the introduction of liver-specific MRI and downsizing chemotherapy**

*Ajay Belgaumkar, Noel Cassar, Fenella Welsh, Kandiah Chandrakumaran, Ben Cresswell, Tim John, Merv Rees*

**North Hampshire Hospital, Basingstoke, UK**

**Background:** Patients undergoing repeat liver resection (LR) for colorectal liver metastases (CRLM) have consistently been shown to have better overall survival (OS) than those undergoing a single LR. This study compared survival outcomes before and after the introduction of liver-specific magnetic resonance imaging (MRI), oxaliplatin-based regimens and the concept of downsizing (“conversion”) chemotherapy, using a prospectively collated single institution database.

**Methods:** 1509 patients with liver-only metastases underwent 1525 LR for CRLM between 01/03/1987 and 01/01/2015. Survival outcomes were compared between patients undergoing either a single LR (A1/B1) or more than one LR (A2/B2) in two time periods - from March 1987 – December 1999 (A1 n = 279, A2 n = 260) and from January 2000 to January 2015 (B1 n = 1031, B2 n = 171).

**Results:** Median age was 64 yrs (IQR 57 – 71) and overall 90-day mortality was 1.8% for single LR, with no deaths after repeat LR. In the first time period to Dec 1999, median survival for Group A1 was 42.1 months (95%CI 34.4 – 50.0), with 5 year OS 17.5% versus A2 median 62.1 months (53.5 – 71.1) and 5 year OS 52.1% (p = 0.034). After January 2000, median survival for Group B1 was 61 months (55.7 – 66.5) and 5 year OS 39.9% versus B2 median 77.2 months (61.1 – 94) and 5 year OS 64.1% (p = 0.011).

**Conclusion:** In the last 16 years, survival of patients with CRLM has improved dramatically. Although such improvement is multi-factorial, patients whose disease pattern permit repeat LR still have longer median and OS compared with patients undergoing a single LR.

Surgery, including repeat LR, remains the most critical factor in achieving long term survival for CRLM.

**P20**

**Assessing Reasons for Failure of Cannulation at ERCP and Anticipating Success at Repeat ERCP**

*Lavanniya Kumar Palani Velu, Colin Steele, Kevin Robertson*

**University Hospital Crosshouse, Kilmarnock, UK**

**Background:** Reasons for ERCP failure are poorly defined. We wished to determine common bile duct (CBD) cannulation rates and identify factors associated with failure as well as success at a second attempt.

**Methods:** Prospectively collected data for consecutive ERCPs performed by a single practitioner between June 2014 and May 2016 was analysed. Previous ERCP, presence of duodenal diverticulum and biliary pathology was recorded. Success or failure of CBD cannulation was then assessed in terms of these variables. A repeat attempt after failed access was made at the endoscopist’s discretion.

**Results:** 464 consecutive ERCPs were analysed. ERCP was performed for gallstone disease in 71.3% of procedures, cancers in 17.7% and other reasons in 11%. Overall CBD cannulation rate was 92.9%. CBD cannulation was successful in all cases with previous sphincterotomy (n = 1190). The CBD cannulation rate in procedures involving intact ampullas of Vater (n = 345) was 90.4%. The incidence of periampullary diverticula was higher when cannulation failed (10.9% vs. 4.8%, P = 0.023). Cannulation failed disproportionately in procedures for cancer, compared with gallstones (18.1% vs. 5.5%, P < 0.01). A second attempt was made after failed cannulation in 16 of 33 cases (48%) and was successful in 13 procedures (81%). Repeat failure was associated with distorted anatomy; cancer (2 procedures) or periampullary diverticulum (1 procedure). Statistically, no factor predicted a second failure. There was no increase in the incidence of complications with a second attempt at CBD cannulation (11.2% vs. 6.3%, P = 0.332).

**Conclusion:** CBD cannulation is predictably achievable if there has been previous sphincterotomy. Duodenal diverticula are common and significantly increase the risk of failed access. Predictably, malignant distortion of the ampulla negatively impacts on cannulation rates. An experienced endoscopist can select cases in which a repeat attempt may be successful without risk of excess morbidity.

**P21**

**Is the use of a robotic camera economically viable? A cost comparison of surgical assistant versus robotic freehand in laparoscopic liver resections**

*Jennifer Barrie, Martyn Stott, Christina Pickles, Dominic Sebastian, Krista Hamill, Daren Subar*

**East Lancashire Hospitals Trust, Blackburn, UK**

**Background:** Laparoscopic liver surgery is gaining national acceptance as the literature suggests it is associated with shorter hospital stay, adhesion formation, reduced abdominal scarring and blood loss. The learning curve can be steep and operating times longer than standard open resections. Classically two assistants are required for the procedure. The use of surgical assistants to hold the camera can be associated with image tremor and assistant fatigue. Robotic camera holders have been able to overcome these drawbacks. The aim of this study is to assess the economic viability of the use of the robotic camera holder in laparoscopic liver resections versus a surgical assistant.

**Methods:** This is a single surgeon consecutive series of laparoscopic liver resections from January 2014 to May 2015. The cost per case if a surgical assistant was holding the camera was determined by the assistant’s hourly rate multiplied by the procedure time. Surgical assistance included a nurse practitioner, foundation year 2 trainee, core surgical trainee, and an average cost of a training registrar (ST3-ST6).

**Results:** Thirty completely laparoscopic liver resections were performed using the robotic camera holder over the study period. Consumables for the robotic camera cost £125 per use. Median operative time was 360 minutes (range 90–840). The total operative time for all cases was 191 minutes. Total cost of the robotic camera holder was £3750 over the entire series. Cost of a hand 8 surgical...
Methods: Total Cholecystectomy is a common operation performed laparoscopically. In difficult situation where the anatomy at Calot’s triangle is distorted a subtotal cholecystectomy is performed thus avoiding damage to the portal structures. Subtotal cholecystectomy involves leaving behind a small remnant of gallbladder.

Results: A retrospective analysis of all patients who underwent subtotal cholecystectomy from 2007–2015 (9years). Patients were identified through electronic operation note database. The inclusion data were adult, subtotal cholecystectomy and complete dataset being available. 100 patients were identified, of which 90 were included.

Results: A total of 90 patients, 50 female and 40 male with a mean age of 62 years are included in this study. In 68 patients (75%) the operation was planned and in 22 patients (25%) it was performed as an emergency procedure. Laparoscopic procedure was attempted in 84 patients (93%) but completed laparoscopically in only 9 patients (10%). In the remainder 6 patients (7%) it was a planned open surgery. The indication for subtotal cholecystectomy was more than one in 29 patients (32%). The commonest indication was unclear anatomy at Calot’s, followed by adhesions to other organs and Mirizzi Syndrome. General postoperative complications such as wound infection, chest infection, sepsis and retention of urine needing symptom treatment was seen in 16 patients(17%). Specific complications related to biliary surgery were seen in 5 patients (5-5%). This includes bleeding from cystic artery stump needing further surgery (n = 1), bile leak needing ERCP (n = 2) and intra-abdominal collection needing radiological drainage (n = 2). The mean length of stay for planned group and emergency group were 7 days and 27 days respectively. Delayed complications were seen in 6 patients (6-7%). This includes 4 patients with retained CBD stones needing ERCP, another 2 patients presenting with further stone formation and inflammation of gall bladder stump needing further surgery 4 years after the primary surgery.

Conclusion: Subtotal cholecystectomy is a safe alternative when total cholecystectomy is not possible. Rarely patients re-present with stone formation and inflammation in residual gall bladder stump.

Subtotal Cholecystectomy – Our Experience
Wen Jit Poh, Alexander Saegar, Ravi Date, Christopher Ball, Jeremy Ward, Kishore Pursnani, Paul Turner, Vinutha Shetty
Royal Preston Hospital, Preston, Lancashire, UK

Background: Total Cholecystectomy is a common operation performed laparoscopically. In difficult situation where the anatomy at Calot’s triangle is distorted a subtotal cholecystectomy is performed thus avoiding damage to the portal structures. Subtotal cholecystectomy involves leaving behind a small remnant of gallbladder.

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Conclusion: Subtotal cholecystectomy is a safe alternative when total cholecystectomy is not possible. Rarely patients re-present with stone formation and inflammation in residual gall bladder stump.

Symptomatic Gallbladder Polyps is an indication for Cholecystectomy
Bianca San Juan¹, Samir Pathak¹, Yazon Khaled¹, Giles Toogood²
¹University of Leeds, Leeds, UK, ²St James’s University Hospital, Leeds, UK

Background: The majority of polypoid lesions of the gallbladder (PLG) are benign, however for the minority with malignant disease the prognosis is poor. The management of PLG remains controversial, stemming from their potential for malignancy. Furthermore, stones attached to the gallbladder wall are often mistakenly interpreted as polyps on ultrasound scan (USS) adding further difficulty to management. The aim was to investigate the number of patients diagnosed with PLG on USS who actually had gallstone disease. The secondary aim was to investigate symptom resolution post cholecystectomy.

Methods: A retrospective review of patients with PLG diagnosis on USS, who subsequently underwent cholecystectomy between March 2004 and June 2014 was undertaken. The database was examined for demographics, preoperative clinical characteristics, intraoperative characteristics and histopathologic diagnosis. A telephone follow up was conducted to assess symptom resolution and pain level.

Results: There were 70 cholecystectomies performed (male:female, 28:42). The median age was 54.5 years (range 25–87). Thirteen patients (19%) were asymptomatic, 55 patients (79%) presented with biliary colic, one with pancreatitis (1%) and one with cholecystitis (1%). On preoperative USS, nine patients (13%) also had concurrent cholelithiasis, whilst three patients (4%) had gallbladder wall thickening evident. However, at histopathological assessment 66 (94%) of patients were confirmed to have stones only, whilst 4 patients (6%) had polyps and stones. No patients were found to have polyps only. Chronic cholecystitis was found in 46 patients (66%) and cholesterolosis in 43 patients (64%). In three patients (4%) malignancies were identified; adenocarcinoma, adenomyoma and metastatic renal cell carcinoma (polyp sizes were 13,15 and 20mm). There were 35 patients included in the symptom resolution analysis. Twenty-four patients (68%) experienced overall improvement, 10 patients (29%) had ‘no change’, one patient (3%) ‘was minimally worse’ and no patient classed themselves as ‘much worse’.

Conclusion: The majority of PLG diagnosed on USS are cholesterol stones and this may be due to cholesterol stones sticking to the inside wall of the gallbladder. A low proportion of PLG patients have malignancies. Symptomatic PLG patients may have good symptom resolution.

Percutaneous transhepatic cholangiographic endobiliary forceps biopsy versus endoscopic ultrasound fine needle aspiration for proximal biliary strictures: a single-centre experience
Kayvan Moham, Yaseen Malik, Carlos Dorosas, John Isaac, Ravi Marudanayagam, Homoyoob Mehrzad, Darius F. Mirza, Paolo Muijesan, Keith J. Roberts, Robert P. Sutcliffe
Queen Elizabeth Hospital, Birmingham, UK

Background: Endoscopic ultrasound fine needle aspiration (EUS-FNA) represents the established method for histological assessment of proximal biliary strictures (PBS). However, its sensitivity and accuracy remain unsatisfactory. Percutaneous transhepatic cholangiographic endobiliary forceps biopsy (PTC-EFB) may represent an alternative option, but its performance was never assessed. In this study, we reported a single-centre experience of tissue-sampling procedures for PBS and compared EUS-FNA with PTC-EFB.

Methods: A retrospective analysis of patients assessed for PBS at a tertiary centre from 2011 to 2015 was conducted. Patients without histologic study of PBS or with hilar recurrence of malignant disease were excluded.

Results: Over the study period, 172 patients were included, of which 56 were operated on and 116 were not. Nineteen patients underwent upfront surgery. The 153 other patients underwent 206 tissue-sampling procedures (102 EUS-FNA, 75 PTC-EFB, 18 ultrasound-guided biopsy, 11 endoscopic retrograde cholangiopancreatography-guided biopsy). Twenty-three patients had two tests, and 15 had three tests. Repetition of tests resulted in increased overall sensitivity (85% versus 69%, p = 0.003) and accuracy (88% versus 74%, p = 0.004) compared to first-line tests. Comparison between EUS-FNA and PTC-EFB showed similar sensitivity (69% versus 75%, p = 0.41), specificity (100% versus 100%, p = 1.00), positive predictive value (100% versus 100%, p = 1.00), negative predictive value (58% versus 38%, p = 0.15) and accuracy (78% versus 79%, p = 1.00).

Conclusion: Repetition of tissue-sampling tests increases their sensitivity and accuracy. Compared to EUS-FNA, PTC-EFB provides similar sensitivity and accuracy without requiring additional invasive endoscopic procedures. Therefore, PTC-EFB could be considered as a standard tissue-sampling method for the assessment of PBS.
**P25**

Prognostic significance of splenic artery involvement and other pathological features in resectable pancreatic body / tail cancer

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**Background:** Distal pancreaticectomy and splenectomy (DP+S) remains the only potentially curative treatment for patients with carcinoma of distal pancreas (DP). Involvement of the splenic artery (SA) is reported in the literature to be a poor prognostic indicator. SA involvement, however, is not routinely evaluated on histological examination of the resected specimen as this is not part of the AJCC staging of pancreatic carcinoma. This study is aimed at evaluating our current practice in reporting the involvement of SA and the influence of other pathological factors on survival following DP+S for carcinoma of pancreas.

**Methods:** Patients who underwent resection of DP for pancreatic cancer at our institution between 2004 and 2014 were included. Univariate analyses were performed to identify the disease related factors that could influence patient survival. Multivariable analysis of survival was not performed, since the sample size was considered too small.

**Results:** Two hundred and thirty two patients underwent distal pancreaticectomy of which 46 patients underwent DP+S for cancer. The median follow up period was 12 months. Kaplan-Meier estimated survival rates were 72% and 40% at one and two years respectively. Univariate analyses found survival to be significantly shorter in patients with evidence of vascular involvement (splenic / portal vein or splenic artery) based on pre-operative imaging (p = 0.026) or pathological examination of the resection specimen (p = 0.045). Only 40% of pathology reports included an assessment of SA involvement. Of these, 65% had SA involvement (encasement / abutment / infiltration). Positive and negative predictive values of recurrent disease based on SA involvement alone were 67% and 38% respectively. Other histological features predictive of significantly reduced overall survival were a diagnosis of adenocarcinoma (p = 0.015), node positive disease (p = 0.026), increasing lymph node ratio (p = 0.011) and perineural invasion (p = 0.020).

**Conclusion:** Histological evaluation of SA involvement is performed in less than half of the patients and there is a need for consensus on routine evaluation of SA involvement in patients with carcinoma of DP as it might determine the need for adjuvant treatment.

**P26**

Prognostic Significance of Pre-Operative C-Reactive Protein, Glasgow Prognostic Score and Neutrophil-Lymphocyte Ratio in Resectable Gallbladder Cancer: A Systematic Review

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**Background:** Neutrophil-lymphocyte ratio (NLR), C-reactive protein (CRP) and Glasgow prognostic score (GPS) have demonstrated good prognostic value in several cancers but its role in gallbladder cancers (GBC) is limited. The aim of this study is to systematically review the current literature to determine their role in predicting survival in GBC.

**Methods:** Using a pre-specified inclusive search strategy MEDLINE, EMBASE and CINAHL databases were electronically accessed identifying studies describing survival in patients after gallbladder cancer resection with high or low pre-operative CRP, GPS or NLR. A proforma was used to extract study author and date, number of patients, age, gender, tumour stage, use of adjuvant therapy and primary outcome data. The modified Grading of Recommendations Assessment, Development and Evaluation (GRADE) system was used in conjunction with the Quality in Prognosis Studies (QUIPS) tool to assess study quality including risk of bias.

**Results:** Forty six studies were identified after initial screening with four studies included that reported survival outcomes in patients with high or low NLR, GPS or CRP in resectable GBC. All studies were retrospective and of low to moderate quality. All studies described a reduction in survival in patients with an elevated NLR, GPS or CRP. Three studies showed NLR to be an independent prognostic marker and one study additionally demonstrated that elevated CRP and GPS were associated with poorer survival.

**Conclusion:** Raised pre-operative inflammatory markers are inversely related to survival outcomes. Currently available evidence suggests that raised pre-operative inflammatory markers are associated with poorer survival. However, these studies are low to moderate quality and retrospective. Further prospective studies are needed to establish their utility in current treatment pathways for GBC.

**P27**

Adjuvant chemotherapy confers no survival benefit following curative surgery for peri-ampullary adenocarcinoma: a Meta-Analysis

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**Background:** Peri-ampullary cancers are uncommon malignancies, often amenable to surgery. Several studies have suggested a role of adjuvant chemo- and chemo-radiotherapy, as oppose to observation in the treatment of surgically resected peri-ampullary cancers. Included articles were also screened for information regarding stage, prognostic factors and toxicity-related events.

**Methods:** A systematic review of the literature between the 1st January 2000 and 31st December 2015 was undertaken to elicit and analyse the pooled overall survival associated with the use of either adjuvant chemo- and chemo-radiotherapy, as oppose to observation in the treatment of surgically resected peri-ampullary cancers. Included articles were also screened for information regarding stage, prognostic factors and toxicity-related events.

**Results:** Fourteen full text articles were included in the study, involving a total 1671 patients (904 in the control and 767 whom underwent adjuvant therapy). The median 3-year overall survival was 37-5% compared 40% in the control and adjuvant groups, respectively (HR 1.08, p = 0.067). In 31-4% of adjuvant patients, one or more WHO grade 3 or 4 toxicity-related events was noted. Advanced T-stage was associated with worse survival (coefficient = -0.14, P = 0.04), whilst nodal status and grade of differentiation were not.

**Conclusion:** This review has shown no associated survival benefit of adjuvant therapy in the treatment of peri-ampullary cancers. Further studies should aim to critically investigate if certain subsets patients, with advanced disease, would benefit from specific adjuvant treatment strategies, to prevent exposing patients to significant toxic side effects.

**P28**

Adjuvant Chemotherapy Surgical Resection in Cholangiocarcinoma: A Propensity Score Matched Cohort Study

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**Background:** Survival of patients with cholangiocarcinoma (CCA) is often poor and surgical resection remains the only curative treatment for these patients. The value of adjuvant chemotherapy following surgical resection remains unknown. Hence, this study aimed to determine the effect of adjuvant chemotherapy following surgical resection in CCA.

**Methods:** We carried out a retrospective analysis of patients undergoing surgical resection for CCA from January 2005 until January 2016 at Queen Elizabeth Hospital Birmingham (QEH). Recorded data included demographics, medical history, presenting symptoms, and radiographic and clinical tumour data.
Patients with bile duct cancer treated non-operatively and those who underwent liver transplantation as primary therapy were excluded. Diagnosis was confirmed through histology. The effects of adjuvant chemotherapy following surgery was risk adjusted using propensity score matching and multivariable logistic regression to produce adjusted odds ratio (ORs).

Results: We identified 612 patients diagnosed with cholangiocarcinoma during this time, of which 36% (219/612) underwent surgical resection for CCA. In our cohort, 64% (29/45) out of 219 patients received adjuvant chemotherapy following surgical resection. Median survival of patients that received chemotherapy vs those that did not were 29 months vs 24 months respectively (p = 0.0471). Propensity score matching created two well balanced groups in a 1:1 ratio. Median overall survival was significantly longer in patients receiving chemotherapy (29 months vs 15 months, p = 0.004). Chemotherapy was associated with a significantly reduced overall mortality (OR: 0.54, 0.35 to 0.84; P = 0.006).

Conclusion: Adjuvant chemotherapy following surgical resection is associated with an increase in overall and progression free survival in patients with cholangiocarcinoma. Future randomised controlled studies are warranted to validate our findings in a much larger cohort.

P29

The changing trends in Pancreatico-biliary tree imaging over the last decade
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Background: This study aimed to quantify the volume of MRCPs ordered in our busy DGH practice and assess the impact on waiting times and utilisation of operative cholangiograms.

The computerised radiological database in our hospital was interrogated to quantify the number of MRCPs over the last decade. From 2011 operative cholangiograms were performed in 42% of patients. The computerised radiological database in our hospital was interrogated to quantify the volume of MRCPs ordered in our busy DGH practice and assess the impact on waiting times and utilisation of operative cholangiograms.

Results: Waiting times, volume of requests and speciality usage were compared.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of MRCP per year</th>
<th>% of MRCP done as inpatients</th>
<th>In-patient waiting time (Days)</th>
<th>Out-patient waiting time (Days)</th>
<th>Number of Operative Cholangiograms</th>
<th>% Requests by non-surgical specialities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>233</td>
<td>46.4</td>
<td>2.47</td>
<td>28.8</td>
<td>n/a</td>
<td>23.4</td>
</tr>
<tr>
<td>2007</td>
<td>283</td>
<td>43.1</td>
<td>2.48</td>
<td>30.92</td>
<td>n/a</td>
<td>24.3</td>
</tr>
<tr>
<td>2008</td>
<td>312</td>
<td>49.1</td>
<td>1.12</td>
<td>18</td>
<td>n/a</td>
<td>26</td>
</tr>
<tr>
<td>2009</td>
<td>398</td>
<td>58.7</td>
<td>0.99</td>
<td>18.3</td>
<td>29.1</td>
<td>29.1</td>
</tr>
<tr>
<td>2010</td>
<td>420</td>
<td>52.6</td>
<td>1.2</td>
<td>23.56</td>
<td>n/a</td>
<td>24.8</td>
</tr>
<tr>
<td>2011</td>
<td>483</td>
<td>52.3</td>
<td>1.38</td>
<td>30.57</td>
<td>145</td>
<td>25.1</td>
</tr>
<tr>
<td>2012</td>
<td>487</td>
<td>56</td>
<td>5.74</td>
<td>36.44</td>
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<td>30</td>
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<tr>
<td>2013</td>
<td>650</td>
<td>47.8</td>
<td>2.92</td>
<td>38.28</td>
<td>92</td>
<td>31</td>
</tr>
<tr>
<td>2014</td>
<td>610</td>
<td>47.7</td>
<td>2.03</td>
<td>35.98</td>
<td>90</td>
<td>35</td>
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<tr>
<td>2015</td>
<td>671</td>
<td>48.1</td>
<td>2.57</td>
<td>46.10</td>
<td>82</td>
<td>37.6</td>
</tr>
</tbody>
</table>

Conclusion: There has been almost a trebling in the number of MRCPs ordered over the last decade. This has been associated with both a marked increase in the number of scans organised by non-operative specialties and a decrease in the volume of operative cholangiograms. This has led to an increase in waiting times for Outpatient MRCP of over 17 days. These data suggest that UGI surgeons should be more involved in the investigation of most routine biliary pathology to reduce the burden on scarce resources.
P32
Histological Evidence of Reversibility of Chemotherapy-associated Liver Injury
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Background: Chemotherapy induced toxicity to the liver is well documented in patients with colorectal liver metastases (CRLM). Hitherto there is paucity of evidence as to whether these changes are progressive or reversible. This study uniquely compared liver injury scores for parenchymal steatosis (PS), sinusoidal dilatation (SD) and lobular inflammation (LI) in patients who had chemotherapy prior to liver resection (LR) for CRLM and who subsequently underwent repeat LR.

Methods: Patients undergoing LR and repeat LR for CRLM between January 2012 and December 2015 were identified and data retrieved from a prospectively maintained database. The total liver injury scores for PS, SD, and LI were compared between the histology of the first and the second resected specimen. Patients who did not have pre-LR chemotherapy or underwent a planned second stage resection were excluded.

Results: During the study period, out of 486 LRs for CRLMs, 59 patients had a repeat LR, of which the study group of 31 patients had prior chemotherapy. Of the study group 42% had improved liver scores, 29% remained static and 29% were worse. Patients (n = 18) not given further chemotherapy fared better with scores of 50%, 28% and 22% respectively, in comparison to those given further chemotherapy (n = 13) prior to second LR: 31%, 31% and 38% respectively.

Conclusion: In the majority of patients, chemotherapy induced liver injury is reversible over time and should not deter patients undergoing repeat LR, though preferably repeat chemotherapy should be avoided.

P33
Predicting the difficulty of elective laparoscopic cholecystectomy – a novel scoring system
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Background: Laparoscopic cholecystectomy is one of the most commonly performed operations by general surgeons, both trainees and consultants. Unfortunately they all come in various shapes and sizes. The aim of this study is to create a scoring system to predict difficulty of elective laparoscopic cholecystectomy.

Methods: One consultant general surgeon’s laparoscopic cholecystectomies between May 2015 and May 2016 (101 patients) were evaluated using a scoring system that included gender, CRP on index admission, gall bladder wall thickness, BMI, previous abdominal surgery, and previous severe acute pancreatitis. Basic patient demographics, length of operation, conversion to open, subtotal cholecystectomy, drain insertion, and length of stay were obtained.

Results: 82 patients were identified retrospectively and organised into three categories depending on score (0–4, 5–9, and 10–22). Category 1 (n = 53, mean age 46–9) had a mean operation time of 77–6 minutes, a 19% conversion rate, a 9–4% likelihood of becoming a subtotal cholecystectomy, an 11–3% chance of having a drain, and a mean length of stay of 0–45 days. Category 2 (n = 22, mean age 51–9) had a mean operation time of 93–9 minutes, a 45% conversion rate, a 31–8% likelihood of becoming a subtotal cholecystectomy, a 36–3% chance of having a drain, and a mean length of stay of 1–95 days. Category 3 (n = 7, mean age 33–4) had a mean operation time of 100–1 minutes, a 0% conversion rate, a 28–6% likelihood of becoming a subtotal cholecystectomy, a 42–9% chance of having a drain, and a mean length of stay of 2–00 days.

Conclusion: Our study demonstrates that we were able to accurately predict those patients who would have a longer operative time, a higher likelihood of conversion to open, and a longer post-operative hospital stay, which were considered surrogate markers for difficulty of procedure. This scoring system may be beneficial in the pre-operative setting.

P34
Inpatient or outpatient MRCP for patients with suspected choledocholithiasis?
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Background: To assess the impact of inpatient or outpatient MRCP on the management journey of patients with suspected choledocholithiasis.

Methods: Retrospective analysis of all MRCP performed for suspected choledocholithiasis from 1/1/14-31/3/14 in South Glasgow was performed. Demographics, biochemical findings, ultrasound and MRCP findings, and subsequent biliary intervention outcome were recorded in an electronic proforma. Descriptive statistics, student T test and Chi square analysis were performed.

Results: 215 MRCP were performed during the study period, 100 were performed for assessment of choledocholithiasis in the acute setting. 62 (62%) were in patient MRCP (IPMRCP) and 38 (38%) were performed as outpatients (OPMRCP). Choledocholithiasis probability based on the McGill criteria (age, bilirubin level, CBD dilation on USS) between the two groups were not significantly different (P=0.755). However, the mean bilirubin for IPMRCP was significantly lower (P<0.05) with patients requiring urgent IPMRCP being younger (P<0.05) but having similar BMI.

Conclusion: If inpatient MRCP is avoided, a marked reduction in cost is predicted, a 70% reduction in patient satisfaction questionnaire score (P<0.05) and a marked improvement in patient satisfaction questionnaire score (P<0.05).
A retrospective study of 29 patients between September 2012 and July 2015 who had 2 weeks of a liver reducing low calorie diet prior to laparoscopic cholecystectomy was performed. For each patient their operative details including duration, inpatient stay, re-admission and complications were recorded. In addition, surgeons’ comments on the intraoperative challenges were noted. These details were compared to patient’s BMI and the weight reduction achieved on the diet.

Results: Between September 2012 and July 2015 29 patients with high BMIs were placed on a 2-week low calorie diet. 9 patients were subsequently cancelled. 20 patients, 15 females and 5 males had surgery. Median BMI was 42.75. On the diet median weight loss was 0.0kg (R = -1.9 to +2.6). Median operating time was 33 minutes. There was no correlation between weight loss and operative duration (R = 0.1037, p = 0.66). Mean length of stay (LOS) was 1 night. There was no correlation between LOS and operating time (R = 0.4012, p = 0.08). LOS was related to BMI (R = 0.5319, p = 0.0158). 8 surgeons commented on the technical challenges secondary to a fatty liver. There were no conversions to open cholecystectomy, no complications and no re-admissions.

Conclusions: Liver reducing low-calorie diets have been widely used prior to bariatric procedures to facilitate the operation. Our study shows that a short duration of a liver reducing low-calorie diet can result in significant weight loss in a few individuals. For Laparoscopic cholecystectomy our study shows no significant change to operative duration after the diet. Surgeons’ observations suggest that a short course diet does not alter liver size sufficiently to facilitate the operation. We appreciate that this study reviewed only a small number of patients. A randomised controlled trial may be of benefit in trying to ascertain the effectiveness of the liver reducing diet for routine surgery in patients with an elevated BMI.

P39

Antegrade Biliary Stenting during Open Bile Duct Exploration
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Background: Managing choledochotomy after bile duct clearance is an ongoing debate. T-tube insertion is not without complication and morbidity, and requires significant post-operative care. Primary closure alone can result in a high pressure biliary system and bile leak. The placement of an antegrade stent through the choledochotomy prior to primary closure is an option for ensuring biliary drainage after bile duct exploration. We reviewed our series of open bile duct explorations where an antegrade stent was placed as an alternative strategy when managing choledochotomy. A stent was placed following duct clearance if there was concern regarding free flow of bile into the duodenum at choledocholaparotomy.

Methods: Patients who had antegrade stent placement were identified retrospectively via theatre records. Case note review was used to gather demographic, complication, length of stay, post-operative clinic visits and readmission data.

Results: 22(MF:15:7) patients with a mean age of 61 years (22-82) were identified during a 5 year period. The indication for surgical stone clearance was failed ERCP in 20. 2 patients were not suitable for ERCP. The median post operative stay was 8 days (3–79) with the abdominal drain remaining for a median of 4 days (1–37). 16(73%) patients had no complications. 4(18%) had bile leaks, 5(22%) wound infections, 1(5%) cholangitis and 1(5%) pancreatitis. All complications were Clavien-Dindo grade 3 or less. Patients (18%) required readmission. The median number of subsequent outpatient visits was 1(1–4). 13 patients had endoscopic removal of stents.

Conclusion: Primary closure of choledochotomy is now routine in uncomplicated cases but in situations where there is concern over high pressure in the biliary tree the placement of antegrade stent may be preferred to T-tube placement. It removes the morbidity associated with T-tubes and may reduce hospital stay. Having the stent in situ allows easier access to the ampulla if required.
P40

Fast-track laparoscopic cholecystectomy services: An innovative referral pathway

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Background: Laparoscopic cholecystectomy (LC) is the gold standard treatment for symptomatic gall stone disease. Traditionally, this has led to a two-stage management, wherein an initial conservative treatment followed by an interval LC is considered. NICE guidelines (1) recommend LC to be performed within 1 week of diagnosis. The timing of surgery has been variable and factors influencing this have been complex. Cost, resource constraints and operative expertise, particularly during non-upper gastrointestinal (GI) Consultant on-calls have lengthened this ideal time period in most cases. We present our observational data of a unique LC fast-track referral pathway in a district general hospital.

Methods: We present a series of prospective LC cases over an 18-month period in whom a fast-track referral service was provided by a single upper GI surgeon. All patients had urgent LC for acute cholecystitis following an innovative referral pathway by way of a unique vetting system and pre-assessment by a dedicated nurse specialist, aiming to provide prompt surgical management without undue delay. Their demographic details, operative findings, laboratory results were recorded in a prospective database. Postoperative complications, conversion rate and hospital stay were also noted.

Results: There were 71 patients in the study with a median age of 48 years (range, 19–84 years). There were 25 males and 46 females. All patients underwent conservative management for acute cholecystitis followed by early LC following an short interval period. There were no conversions. The median time interval between admission and operation was 8 weeks (normally 18 weeks as per Trust policy). There were no bile leaks and no common bile duct injury. There were two cases of superficial wound infection.

Conclusion: Urgent LC for acute cholecystitis is a feasible treatment option in a district general hospital. A safe practice can be ensured by adherence to a fast-track referral pathway and a multidisciplinary, Consultant-delivered service.

Reference:

1. NICE Clinical Guideline CG 188 - Gallstone Disease: Diagnosis and management of cholelithiasis, cholecystitis and cholecodocholithiasis - HQSD (NICE CG188) 13/14

P41

The evolution of liver resection for colorectal liver metastases

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Background: The definition of resectability of colorectal liver metastases (CRLM) is constantly being challenged, and with advances in down staging therapies, more aggressive approached to resectional liver surgery are being adopted. The aim of this study is to assess the evolving practice of resectional liver surgery in CRLMs in a single centre HPB unit.

Methods: All patients who underwent surgical resection for CRLM from 2005 to 2015 were included. Patient demographics, details of primary and secondary disease, histology, and follow up data including recurrence and mortality were recorded.

Results: A total of 473 patients, with a median age of 67 years (18–89), underwent surgery for CRLM from 2005 to 2015 inclusively. 320 patients were male, while 153 were female. Data was divided into 3 sub-groups – Group 1 (2005–2008), Group 2 (2009–2012), and Group 3 (2013–2015). The mean number of annual resections in Group 1 was 24.5, compared to 51.3 and 58, in Group 2 and 3, respectively. A trend towards less major resections and an increase of liver parenchymal preserving surgery was noted. Group 1 had 62% major resection, compared to 33% and 24%, in Group 2 and 3, respectively. An increased trend towards repeat/re-do liver resections was also noted in Group 3. Five year overall survival from 2005 to 2010 improved from 16.8% to 53.1%, while five-year disease free survival improved from 0% in 2005 to 46.4% in 2010.

Conclusion: Liver surgery for CRLMs is constantly evolving with the use of new surgical approaches and adjuvant therapies; and is associated with better outcomes.

P42

Management Experience of Cholangiocarcinoma in Patients with Primary Sclerosing Cholangitis (PSC)

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Background: Primary sclerosing cholangitis (PSC) is an autoimmune disease affecting all types of bile ducts. It is widely recognised as a risk factor for cholangiocarcinoma and these patients are challenging as they are often unsuitable for surgical resection. Hence, our aims were to review the surgical management of cholangiocarcinoma arising from a background of PSC.

Methods: We carried out a retrospective analysis of patients undergoing surgical resection for intrahepatic, hilar and distal CCA from January 2003 until January 2016 in Queen Elizabeth Hospital Birmingham (QEHB). Recorded data included demographics, medical history, presenting symptoms, and radiographic and clinical tumour data. Patients with bile duct cancer treated non-operatively and those who underwent liver transplantation as primary therapy were excluded. Diagnosis was confirmed through histology. Kaplan-Meier curves were plotted and log rank tests used to compare time from operation to death. Cox proportional hazards models developed by forward stepwise regression were used to identify predictive factors of overall survival.

Results: We identified 313 patients diagnosed with cholangiocarcinoma during this time, of which 14 (4%) were on a background of PSC. There were no significant differences in patients and tumour characteristics between both PSC vs non-PSC groups. In the PSC group, 8 patients underwent major surgical resection of their tumour of which 50% (4/8) achieved a R0 resection. Median overall survival between PSC vs non-PSC were 6 months vs 14 months respectively (p = 0.004). Cox regression analysis identified PSC as a significant negative prognostic marker of overall survival (HR: 3.64; 95% CI: 1.81 – 7.29, p < 0.001). Gain resection of cholangiocarcinoma on a background of PSC is often difficult. However, surgical resection with curative intent remains superior to other modalities of treatment. Hence, improved pre-operative management through neo-adjuvant chemotherapy or radiotherapy may provide an alternative prior to surgery and improve outcomes of patients.

P43

Implementation of a one-stop multidisciplinary clinic for liver-directed therapy in patients with primary or secondary liver malignancies

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Background: Over the past decade there has been an expansion in the range of liver-directed therapies (LDTs) available for patients with primary/secondary liver malignancy. For many patients selection of the appropriate treatment modality/modalities is complex, requires repeated clinical assessment and may be associated with a prolonged interval before treatment is commenced. The one-stop multidisciplinary clinic provides an opportunity to: assess the patient, 
perform (contrast-enhanced) ultrasound, and determine feasibility of alternative LDTs. The aim of this study was to summarise our experience following the one-stop clinic’s implementation.

**Methods:** All patients with suspected liver malignancy were reviewed in the regional liver multidisciplinary meeting. Patients initially deemed unresectable that were potential candidates for alternative LDTs were referred. All patients referred to the clinic between 1st January and 31st December 2015 were reviewed.

**Results:** 79 patients were referred. 33 had primary and 37 had secondary lesions. Colorectal (n=28), neuroendocrine (4), breast (2), and other (3). 9 patients with indeterminate lesions proved to have benign disease and were discharged.

The local colorectal MDTs were not aware that the time period had been prospectively identified for subsequent analysis.

**Results:** In total, 94 patients had suspected liver metastases, of whom 35 (35%) had multi-site metastatic disease and were not therefore referred to the specialist MDT: 61 patients had liver limited disease, of whom 32 were referred and discussed at the regional specialist liver metastases MDT. In total 29 patients with liver only metastases were not referred to the specialist liver MDT. The reasons for non-referral were as follows: patients were unfit for any further treatment (n=13); patients had further local investigation of indeterminate liver lesions which proved to be benign (n=10); patients had previously discussed at the specialist liver MDT (n=1); patients declined any further treatment (n=2), and 1 patient was inappropriately not referred. The scans of this patient have been reviewed and liver resection would not have been possible.

**Conclusion:** This study indicates that the rate of inappropriate non-referral is low and most patients with liver limited metastatic disease not referred to the specialist MDT are managed appropriately.

**P46**

Novel group practice model in Hepatopancreatoenterobiliary service delivery

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**Background:** There is a need for novel models of service delivery which can effectively utilise scarce skills over a wide geographic area. We present our experience of starting a single specialty super group with hepatopancreatoenterobiliary (HPB) and transplant services as a focus offering services over a wide span of Northern and Southern Indian states.

**Methods:** A speciality group (Integrated Liver Care group) of 5 HPB surgeons, 3 Hepatologists, 2 Interventional radiologists, 1 Infectious diseases consultant and 3 specialist liver anaesthetists was constituted in 2013 providing services in three base multispeciality hospitals. Common protocols for preoperative assessment, surgical management and postoperative care were developed by consultation and followed across all centres. Each centre has lean surgical and medical teams, and surgeons travel to centres to support major hepatobiliary surgical and transplantation activity as it happens. Data is collected and audited centrally. Over 28 months, the network has grown to 3 hub hospitals which support 14 spoke units, where clinics are offered in association with local teams. Regular weekly multidisciplinary meetings are conducted via videolink.

**Results:** 435 major hepatobiliary and liver transplant procedures and over 100 interventional radiology procedures (TIPPS, TARE and TACE) have been performed over 3 centres. These include 173 liver transplants (Live donor – 58, Cadaveric donor 115), 125 Liver resections, 16 splenorenal shunts for portal hypertension, 29 resections for Pancreatic cancers, 41 procedures for benign pancreatic pathologies, 15 Hepatocjejunostomies and reconstructions for biliary injuries and benign strictures, and 45 major laparotomies. All the three hub centres had no previous liver resectional or liver transplant facilities which were set up from scratch and interventional radiology services were supported for escalation in hepatobiliary interventions.
Introduction: Significant impact can be made in Hepatobiliary service provision via novel singular focus teams. The system benefits from the added advantage of specialised pooled resources like Liver Donor Liver Transplantation, liver pathology, Infectious diseases consults, specialised interventional radiology and laparoscopic HPB surgery. Low volume centres can be managed by teams which have high volume experience till the individual centres become high volume and viable for larger specialist recruitments.

Conclusion: The presence of lymph node disease, worsening T stage and microvascular invasion indicate poor overall prognosis. It is unclear whether performing an extended or radical resection in patients known to have lymph node involvement offers any survival advantage.

P49

Outcomes in severe acute pancreatitis: A District General Hospital experience

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Background: Severe acute pancreatitis (SAP) has a significant morbidity and mortality. Guidelines by the International Association of Pancreatology (IAP) 2013 provide evidence for best practice in managing acute pancreatitis. To assess outcomes of patients with SAP in our hospital in accordance with the IAP guidelines.

Methods: A retrospective cohort study of all patients admitted with pancreatitis was conducted between November 2014 and November 2015. SAP was diagnosed if systemic inflammatory response syndrome was present with hyperamylasaemia on admission. Demographic, aetiological, length of stay, organ dysfunction, radiological assessment, critical care admission, biliary tract management, cholecystectomy timing, readmission and mortality data were analysed.

Results: 30 (17 male, 13 female) out of 101 patients with acute pancreatitis had SAP. Average age (standard deviation) was 54.5 (17.5) years, with an average length of stay of 7.2 (6-4) days. Aetiologically, alcohol-induced 11 cases, gallstones 11 cases, drug-induced 1 cases and idiopathic 7 cases. Despite initiation of fluid resuscitation immediately on admission, 4 patients had persistent renal failure 48 hours after admission. 29 patients underwent radiological assessment by either US or CT scan, of which 8 received both. Average time to initial radiological assessment was 2.1 (2.7) days. Three patients underwent MRCP, 5 patients ERCP and 1 patient EUS. Laparoscopic cholecystectomy was performed in 3 patients with an average time to operation of 6.7 (3-2) weeks. Five patients were readmitted within 6 weeks. Four patients were admitted to critical care (HDU 2, ITU 2), 3 of whom died. Overall mortality was 13.3%.

Conclusion: Severe acute pancreatitis can be managed in a district general hospital but has an associated morbidity and mortality. Protocol driven management of SAP could lead to better outcomes.

P48

A 20 year experience of surgical gallbladder cancer management in a tertiary referral centre

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Introduction: Gallbladder cancer, although rare is associated with poor prognosis. We identified a retrospective cohort of patients who underwent surgery to assess overall outcomes and determine factors associated with survival.

Methods: Patients undergoing surgical management following a diagnosis of gallbladder cancer between 1994 and 2014 were identified from hospital records. Data including operation type, histological features and overall survival were recorded. Survival outcomes were analysed using the Kaplan-meier method.

Results: Fifty six patients underwent surgical resection following diagnosis of gallbladder cancer. A previous cholecystectomy had been undertaken in 37 patients. Sixteen patients underwent a major liver resection; 29 underwent a segment 4/5 liver resection (extended resection); 9 patients underwent a palliative resection and were excluded from further analysis. Positive lymph nodes (p = 0.020), increasing T-stage (p = 0.0148) and microvascular invasion (p = 0.0011) were associated with worse overall survival. Median survival was 39.2 months in patients with N0 disease compared with 12-2 months in patients with lymph node positive disease.

Conclusion: Resection of retroperitoneal nodal metastases from colorectal adenocarcinoma achieves superior outcomes in selected patients

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Background: Resection of lymph node (LN) metastases from colorectal adenocarcinoma was traditionally deemed unnecessary due to presumed poor associated outcomes. Evidence now shows that extensive lymphadenectomy at primary colorectal resection is associated with superior outcomes; however, a paucity of data exists regarding the resection of metachronous retroperitoneal LN metastases that develop following resection of the primary tumour.

Methods: A retrospective review of case notes, computerised records and departmental databases was performed for all consecutive patients undergoing retroperitoneal resection for colorectal LN metastases between 2012 and 2016.

Results: Seven patients (2F/5M; median age 58 years (range 44-71 years); median follow-up 24 months (range 2-47 months)) were diagnosed with isolated retroperitoneal LN metastases during the study period. All patients had T3/4 disease with LN involvement at primary colorectal resection (two right colonic procedures/five anterior resections) and all underwent post-primary resection adjuvant chemotherapy.
Emergency laparoscopic cholecystectomy: Two years outcomes review at a tertiary level centre

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Background: Laparoscopic cholecystectomy has been widely adopted as the definitive treatment of choice in patients with gallstone disease. With competing demands on elective lists and increasing number of patients re-admitted with biliary related complications following diagnosis we devised a model in our unit to increase the uptake of patients dealt with during their index admission with various gallstone presentations in an attempt to improve service provision and patients satisfaction.

Methods: A prospectively maintained database for all patients undergoing emergency laparoscopic cholecystectomy (ELC) between January 2014 to Dec 2015 was reviewed. Patient demographics, indications for operation, conversion rates, mean operative time, rapidity of access to emergency lists, 30 days complications and re-admissions and the number of cases performed over weekends were all recorded.

Results: A total of 215 patients underwent an emergency laparoscopic cholecystectomy (ELC) during the study period, 72% were females while 28% were males; mean age was 48 years (range 17–85 years). Indications for ELC were Acute cholecystitis 55.8% (N = 120) Pancreatitis 22.8% (N = 49) Symptomatic gallstones19% (N = 41) and Jaundice 2.4% (N = 5). Bile duct imaging via operative cholangiogram /ultrasound was performed in 9.7% (N = 21) while conversion to open procedure occurred in 2.8% (N = 6) of the cases. Mean operative time for laparoscopically completed cases was 91.1 mins (range 29–195 mins).

Mean number of days for diagnostic work up and access to surgery was 2.7 days (range 0 – 22 days) while following stay in hospital post ELC was achieved in 48.8% of the cases (N = 105). 30 days complications occurred in 12% of the cases with bile leak 5% (N = 11), post-operative collections 2.8% (N = 6), CBD stone/Jaundice 2.3% (N = 5), wound problems 1.4% (N = 3), pancreatitis 1.4% (N = 3), bleeding 0.9% (N = 2) with overall 30 day re-admission rate of 8.8%. Operations performed over weekends (Saturday/Sunday) accounted for 6% (N = 13) of the total cohort.

Conclusion: Laparoscopic cholecystectomy is a safe and reproducible technique for the management of gallstone disease in the acute setting, models to plan emergency services helps in reducing costs and morbidities incurred following representation.

P53

The evolving role of the laparoscopic subtotal cholecystectomy

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Background: Subtotal cholecystectomy (SC) is performed when safe dissection in Calot's triangle is not possible. SC can reduce catastrophic biliary pedicle injuries. Conventionally it is an open procedure but more recent data suggests it can safely be performed laparoscopically. Aim: To investigate the incidence/outcomes of SC.

Methods: Retrospective analysis in large DGH of SC from 2011–2015. Data was retrieved and analysed from electronic and paper records.

Results: Sixty-six cases identified, mean age 64 (25–88 years), of which 57% were male. Laparoscopic SC was performed in 86.4% of cases (121% converted to open). Interestingly only 15 (23%) cases were non-elective cases. The use of SC increased consistently over the study period, rates rose from 0.5% 2011–12, 1.6% 2012–13, 2.7% 2013–14 and 5.4% 2014–15. Method of closure of gall bladder remnant varied, 49% were oversewn, 27% with Haemolocks, 12% with Endoloops, 1% Endo GIA stapler and unclear in 7 patients. 97% of patients had an intra -operative drain placed. Bile leaks were only seen in 10 patients and of these 8 required ERCP. Biliary duct stones were seen in 5 patients. Overall ERCP use post operatively was 15-1%. There were four gallbladder fossa collections (6%). There were no 30-day deaths or bile duct injuries.

Conclusion: SC is a safe option in the management of “difficult” gallbladders. It can be performed laparoscopically and is associated with acceptable morbidity with reduced risk of biliary injuries. Use of a surgical drain is recommended as it allows prompt identification of bile leaks and can even be therapeutic.
PS4

Cross-match policy for elective Hepatopancreatobiliary Surgery: Time for change

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Background: Accurate cancer staging is critical to delivering correct treatment, be that surgery with curative intent, down staging therapy prior to surgery or palliation. In certain cancers PET-CT is established in staging, response and post-surgical surveillance. Its role in staging and surveillance in HPB cancers is not fully established. The Royal College of Radiologists guideline for indication of PET-CT in HPB cancers is where other cross sectional imaging is equivocal and a PET-CT would upstage the patient, resulting in a decision not to operate. The cost of PET-CT is around £1000 to the NHS. We wanted to establish in those patients having a PET-CT in our unit how many were upstaged.

Methods: Alliance medical supplied a list of patients who underwent PET scans for HPB malignancy in our unit. Using this data a retrospective review of the electronically held MDT outcome letters was performed. Information regarding cancer type, indication for PET CT and outcome from performing the PET-CT was reviewed.

Results: A total of 51 patients were identified from a 05/2013 to 02/2016 cohort that had undergone HPB MDT that had PET-CT. 48(94%) were for staging prior to listing for surgery, 3 (6%) were for surveillance and suspected recurrence. 28 were for pancreatic cancer, 6 for HCC, 5 cholangiocarcinoma, 2 gallbladder cancers, 2 ampullary, 1 duodenal, 1 GIST and 4 unknown primaries. Of the 48 patients who had a staging scan 11(27%) resulted in upstaging deeming them unsuitable for surgery and 33(69%) were staged suitable for surgery. Pancreatic cancer was the largest subgroup, 26(54%) patients had a staging PET-CT of this 5(19%) were upstaged and not suitable for resection.

Conclusion: Precise pre-operative staging is critical; it is paramount where possible to save patients having unnecessary surgical explorations or non-curative resections due to undetected distant metastases. In our unit where a PET-CT is performed for preoperative staging it upstaged in 27% of cases, highlighting the importance of this investigation in preventing exposure of patients to unnecessary surgery.

PS5

Effect of Pre-operative PET-CT on Suitability for Surgery with Curative Intent in HPB cancers: a retrospective review

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Background: Technical improvements have resulted in a reduction in blood product requirements in major hepatopancreatobiliary (HPB) surgery. Recently, the number of cross-matched packed red cells (PRC) for HPB surgery at our tertiary UK centre was reduced from 4 to 2 units, unless indicated. The aim of this study was to analyse the clinical impact and outcomes based on this cross-match policy.

Methods: All elective HPB resections between May 2014 and December 2015 were retrospectively analysed. Demographic, clinical and histopathological data were collated. Outcomes measured included intra-operative transfusion requirements and morbidity. Factors associated with increased blood usage were also identified.

Results: A total of 372 patients were included, with 125 patients receiving a blood transfusion during their hospital stay (median 2 units, range 1–10). The median age was 66 (range: 16–84) years. Median pre-operative haemoglobin requiring transfusion was 121g/L (range 85 – 159). Of the 99 patients transfused intra-operatively, 70% required 1 – 2 units hence a saving of £89,748 by altering cross-match from 4 to 2 units. Transfusions of more than 4 units of PRC were associated with certain operations: right hemi-hepatectomy, Whipple’s increased length of stay and morbidity.

Conclusion: Elective HPB resections seldom require major intra-operative transfusions. A cross-match policy of 2 units PRC is safe in HPB surgery.

PS6

Success of ERCP in patients with gastrojejunostomy: a challenging but dwindling problem

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Background: The advent of proton pump inhibitors and use of Roux en Y reconstruction mean those patients for whom the biliary ampulla is accessible through a gastrojejunostomy is shrinking. However, there remains a cohort of patients who have had simple loop gastrojejunostomy as part of surgery for peptic ulcer disease and we present a District General Hospital experience of ERCP in this group.

Methods: Data for all ERCP performed by a single practitioner between June 2014 and May 2016 were collected prospectively. ERCP performed in patients with gastrojejunostomy were identified. Casenotes were examined for indication for ERCP, ability to establish common bile duct (CBD) access, reasons for failure, outcome, morbidity and mortality.

Results: 6 patients with an average age of 80 years of age (71–85) and presence of loop gastrojejunostomy underwent ERCP in a cohort of 464 patients (1.3%). 4 of 6 (66.7%) had successful cannulation of the CBD, while 2 failed. Needle knife was used to attempt access in 50% of patients. 1 patient failed due to a large duodenal diverticulum, while a second failure occurred due to inability to identify the ampulla due to tumour. 4 of 6 had gallstones while 2 had malignancies. 2 of 6 died at 51 and 68 days post-ERCP, respectively, from burden of malignancy. A variety of approaches were required to complete ERCP including use of end-viewing and side-viewing endoscopes, needle-knife and pyloric dilatation. These techniques were documented with pictorial evidence. No complications related to ERCP were seen in any of these patients.

Conclusion: ERCP is possible in elderly patients with simple loop gastrojejunostomy with good rates of success and low complication rates. Though an endoscopic challenge, this dwindling group of patients should still be considered for ERCP. We provide pictorial demonstration of methods used to achieve successful cannulation in this difficult subset of ERCP patients.

PS7

Outcomes after resection of hepatocellular carcinoma in elderly patients


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Background: With recent advances in operative techniques and perioperative care, major liver surgery has been established as safe and effective for indications such as colorectal liver metastases in the elderly (>70 years). The aim of this study is to examine this relationship in liver surgery for hepatocellular carcinoma (HCC).

Methods: A prospectively managed database of HCC patients at our institution was interrogated from January 2010 to April 2015. Patients who underwent liver resection were identified and profiled according to age (group A > 70 years vs group B < 70). Patient demographic, tumour stage, morbidity, mortality, disease-free and overall survival were recorded. Comparison of independent variables were made using the Mann–Whitney U test and Kaplan-Meier estimates with log rank test was used for survival analysis.

Results: Group A (n = 22, mean age: 75 ± 4.3) and B (n = 45, mean age: 54.7 ± 10.5) had similar incidence of liver cirrhosis (p = 0.084), with no difference in operative time or transfusion requirements between the groups. 51% of subjects in group A underwent a major hepatectomy compared with 41% in group B (p = 0.032). Major co-morbidities were similar for both groups apart from incidence of hypertension (group A, 59%; vs. group B, 24%; p = 0.005). Minor (Clavien-Dindo ≤ III: Group A 91%; vs. Group B, 44%;
Liver cirrhosis was present in 91%

Results:

Methods:

Background:

Liver cancer occurs in populations with a well-defined set of risk factors and has a protracted preclinical phase, meaning that timely identification of disease can lead to appropriate treatment at a more curable stage. A simple, easy-to-administer risk prediction model based on commonly available data at health checkups would be of great value.

Methods: Observational study between January 2012 and November 2013 at Crosshouse Hospital included 45 Hepatocellular Cancer (HCC) patients. The following variables recorded: age and sex of the patient, aetiology of underlying liver disease, imaging modality used for HCC diagnosis, presence of cirrhosis, liver tests and serum virological markers, Child-Pugh scoring, tumour size, tumour extension, portal vein thrombosis, alpha fetoprotein (AFP) level (ng/dL) at diagnosis, evidence of distant metastases at diagnosis, and treatment. Pearson correlation performed between alpha FP/Child-Pugh score (CPS), Nodule size and Alanine Aminotransferase (ALT).

Results: Total of 45 patients with HCC were analyzed in this study. 80.9% of patients were male. The mean age of the patients was 66-62 ± 11-68 years. Liver cirrhosis was present in 91.2%. The most frequent cause of liver disease was hepatitis C infection (38-97%), followed by alcohol (22-79%), hepatitis B (11-03%). Most patients had Child-Pugh class A (71-13%) or B (22-8%), and only 5-9% had Child-Pugh class C. A total of 23 patients (16-9%) had vascular invasion. At diagnosis, serum AFP was ≤ 20 ng/mL in 57%, > 20-200 ng/mL in the 20% and > 200 ng/mL in 23%. Pearson correlation of Alpha FP and CPS = 0.367

P60

Other indications for ERCP

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Background: The majority of ERCP are undertaken for stone disease or malignant strictures. We wished to describe the practice outside of these indications at a city teaching hospital.

Methods: For the last year we have prospectively maintained a database of all ERCP carried out in our institution and indication is coded as stone disease, malignant stricture or other. We selected all cases coded as other and looked at their indications using the computerised clinical records.

Results: In the last 12 months 511 ERCP were carried out and 65 of these were coded as other indication. These further subdivided into 22 cases for sphincter of oddi dysfunction, 15 for ampullary inspection, 11 for benign strictures, 10 for bile leak and 6 for chronic pancreatitis, with one case being for a gallbladder cancer causing obstruction from nodal disease. Of the 15 ampullary inspection cases, 10 CT scans had suggested double duct sign and 2 had indicated an ampullary abnormality. Endoscopically 9 ampullae appeared normal and on only one occasion did pathology reveal malignancy. Of these 15 patients, 3 had cholangiogram performed, with no abnormality seen.

Conclusion: Over 10% of ERCP are performed in our institution for non stone, non malignant stricture indication and the two most common indications for this were sphincter of Oddi dysfunction and ampullary inspection. Ampullary inspection was a low yield test but may save on EUS resource when this is a less available procedure.

P61

Trends in Liver surgery in England – a decade and beyond

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Background: Liver surgery has witnessed several changes in clinical practice over the last few years. Treatment of metastatic liver disease, the advent of liver directed ablative treatments and novel pharmacological agents are just a few examples that have changed the way liver surgery is practised and have improved patient outcomes. We aimed to assess these changes within the English NHS over the last decade.

Methods: The Health and Social Care Information Centre website (www.hscic.gov.uk) was interrogated to collect national data for patients who had undergone liver surgery or a liver directed therapy from 2005 – 2015. Trauma patients were excluded. We analysed various demographics and trends for various liver surgical treatments and calculated their Compounded Annual Growth Rate (CAGR) using Microsoft Excel and IBM SPSS 22.

Results: For major resections and standard extended hepatectomies, 958 Finished Consultant Episodes (FCEs) were recorded in 2014–2015, in comparison to 737 in 2005–2006; a 30% increase (CAGR 3%) and consequently 7% more bed days were used.
For minor resections, overall there were 70% more FCE’s (CAGR 6%) in 2014–2015 (1670) in comparison to 2005–2006 (985) and 30% more bed days were used.

The most significant increase was noted in various novel ablation and embolization procedures including SIRT (Selective Internal Radiotherapy). In 2005–2006, only 726 FCE’s were recorded. By 2014–2015, the numbers increased to 2811; an exponential rise of 290% with a CAGR of 16%. This led to a 14% increase in waiting times and 101% increase in bed days.

**Conclusion:** Over the last decade, there has been an overall increase in numbers of all forms of surgical treatments for liver diseases. This has lead to an increase in bed pressures and has affected waiting times. This information could be of great importance in future planning of services in liver surgery within the NHS.

**P62**

Trends in Gall bladder surgery in England – a decade of progress

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**Background:** Choledochectomy is one of the commonest surgical procedures performed within the NHS. On-going changes within the NHS of promoting more day case procedures and increasing evidence favouring urgent surgical treatment for acute cholecystitis, has been re-shaping clinical practice to treat gall bladder disease over the last decade. We aimed to assess the effects of these changes, if any, within the English NHS over the last decade.

**Methods:** The Health and Social Care Information Centre website (www.hscic.gov.uk) was interrogated to collect national data for patients who had undergone gall bladder surgery from 2005 – 2015. We investigated for all surgical and interventional procedures related to the gall bladder and analysed various demographics, overall trends as well as their Compounded Annual Growth Rate (CAGR) using Microsoft Excel and IBM SPSS 22. Endoscopic procedures were excluded.

**Results:** In 2005–2006, 51,830 Finished Consultant Episodes (FCE’s) were recorded for all surgical and interventional gall bladder procedures. By 2014–2015, the number of FCE’s increased to 76,415; an increase of 47% and a CAGR of 4%. Interestingly there was an overall 26% decline (CAGR −3%) in the mean waiting times for patients from 89 days in 2005–2006 to 66 days in 2014–2015. The overall usage of bed days also declined by 20% by 2014–2015 (CAGR −2%). There was no change in the average age of the population including in the elderly.

**Conclusion:** Over the last decade, there has been a continuous increase in numbers of surgical procedures for the treatment of gall bladder disease. Despite the increased pressure on precious healthcare resources and the workforce, there was an overall decline in the number of bed days used and the waiting times. With the continuing trends, this may not be sustainable in the future and therefore this information could provide insights in future planning of surgical services, especially for day case surgery within the NHS.

**P63**

Delay in diagnosing and managing patients with pancreatic cancer does not influence outcome

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**Background:** Despite advances in the management of pancreatic adenocarcinoma, the prognosis remains poor. Studies into delays in the investigation and treatment of hepatopancreatobiliary (HPB) malignancies have produced conflicting results. The aim of this study was to determine whether a delay in diagnosis and subsequent treatment of patients with pancreatic cancer influenced survival outcomes.

**Methods:** Data collated included all patients diagnosed with pancreatic cancer between January 2012 and December 2015. Time from date of referral to date of diagnosis (TD1, target ≤ 31) and from date of diagnosis to date of treatment commencement (TD2, target ≤ 31) was measured. Overall compliance with the national target to commence treatment ≤ 62 days from referral (TD3) was established. Median survival was also determined.

**Results:** A total of 515 referrals (urgent inpatient (n=235), two-week-wait (2WW, n=156) and routine (n=124)) with a diagnosis of pancreatic adenocarcinoma were included, TD1 ≤ 31 was achieved in 78% of urgent inpatient and 2WW referrals. TD2 ≤ 31 was achieved in 84%, and TD3 ≤ 62 was achieved in 86%, respectively. There was no statistically significant difference (p = NS) in survival of patients that were diagnosed and treated before or after 62 days from referral. The main prognostic factor for survival was a resectable tumour (median survival: 96 vs 3 months). Patients referred to other specialties prior to HPB specialty (n=26) were twice as likely to experience delays in diagnosis and treatment.

**Conclusion:** Delay in diagnosis and treatment of pancreatic cancer does not affect the overall survival in these patients. Early referral to HPB services is still recommended.

**P64**

Endoscopic Ultrasound-Guided Drainage of Pancreatic Fluid Collections Using Plastic Double Pigtail Stents: a review of 27 consecutive cases

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**Background:** Pancreatic fluid collections (PFCs) may arise acutely as a result of pancreatic cancer and may be treated by percutaneous drainage (n=124) with a diagnosis of pancreatic adenocarcinoma were included. TD1 ≤ 31 was achieved in 84%, and TD3 ≤ 62 was achieved in 86%, respectively. There was no statistically significant difference (p = NS) in survival of patients that were diagnosed and treated before or after 62 days from referral. The main prognostic factor for survival was a resectable tumour (median survival: 96 vs 3 months). Patients referred to other specialties prior to HPB specialty (n=26) were twice as likely to experience delays in diagnosis and treatment.

**Methods:** A retrospective review of consecutive EUS-GD of PFCs performed by a single surgeon in a tertiary referral centre between January 2012 and December 2015. Time from date of referral to date of diagnosis (TD1, target ≤ 31) and from date of diagnosis to date of treatment commencement (TD2, target ≤ 31) was measured. Overall compliance with the national target to commence treatment ≤ 62 days from referral (TD3) was established. Median survival was also determined.

**Results:** A total of 515 referrals (urgent inpatient (n=235), two-week-wait (2WW, n=156) and routine (n=124)) with a diagnosis of pancreatic adenocarcinoma were included, TD1 ≤ 31 was achieved in 78% of urgent inpatient and 2WW referrals. TD2 ≤ 31 was achieved in 84%, and TD3 ≤ 62 was achieved in 86%, respectively. There was no statistically significant difference (p = NS) in survival of patients that were diagnosed and treated before or after 62 days from referral. The main prognostic factor for survival was a resectable tumour (median survival: 96 vs 3 months). Patients referred to other specialties prior to HPB specialty (n=26) were twice as likely to experience delays in diagnosis and treatment.

**Conclusion:** Delay in diagnosis and treatment of pancreatic cancer does not affect the overall survival in these patients. Early referral to HPB services is still recommended.
**P65**

**Successful management of a persistent bronchobiliary fistula with histoacryl/lipiodol mixture under endoscopic guidance: case report and review of literature**

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**Background:** Bronchobiliary fistula (BBF) following liver-directed therapy (resection/ablation) is a rare complication in which an abnormal communication between the biliary tract and bronchial tree is formed. Data guiding best practice relating to management of these patients are most notably absent.

**Methods:** This case report describes the successful management of a persistent BBF following multiple liver wedge resections and microwave ablation (MWA) in a 69-year-old patient with metastatic neuro-endocrine tumour (NET) of the terminal ileum.

**Results:** A 69-year-old male presented with unexplained weight loss and was subsequently diagnosed with NET of the terminal ileum and liver metastasis. Following elective right hemicolectomy and multiple bilobar liver wedge resections combined with liver MWA, the patient developed an early bile leak. A month later a right subphrenic collection was identified and 4 months following surgery biliopitsy was noted. Numerous attempts with endoscopic retrograde biliary drainage (ERBD) failed to achieve sufficient biliary drainage and resolution of the bilipitsy. The patient was successfully treated with endoscopic injection of a mixture of histoacryl glue and lipiodol which sealed the fistula tract. The patient has no clinical or radiological evidence of BBF 6 months post intervention. To our knowledge, there are only two cases documenting the use of histoacryl glue via endoscopic approach for the management of a persistent BBF.

**Conclusion:** We propose a novel approach for persistent BBF management with endoscopic histoacryl glue embolization of the fistula tract. It should also be considered as either an adjunct to ERBD or when biliary tract decompression by drainage and/or sphincterotomy fails, prior to proceeding with surgical interventions.

**P66**

**Surgical resection for duodenal adenocarcinoma: A single centre analysis of long-term outcomes**

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**Background:** Surgical resection remains the best chance of cure in patients with duodenal carcinoma; however, investigative algorithms are inconsistent and there is a lack of well-established treatment pathways. As such, a paucity of data exists regarding neo-adjuvant/adjuvant regimens, as well as novel imaging modalities such as PETCT.

**Methods:** A retrospective review of case notes and computerised records was undertaken for all patients with duodenal adenocarcinoma undergoing resection at a single centre.

**Results:** Twenty-one patients underwent resection between Nov 1997 and July 2015 (13M/8F; median age 64 years (range 52–79 years); median length of stay 17 days (range 8–74 days); 10(48%) PPPD/11(52%) Whipple procedures; one FAP).

Post-operative complications occurred in three patients (one delayed gastric emptying, one relook laparotomy, and one with pancreatic leak) and there was one post-operative death at 45 days (pancreatic leak with subsequent intra-abdominal haemorrhage/collection and multi-organ failure). Subsequent histopathology demonstrated 13(62%) T4, six(29%) T3 and two(10%) T2 tumours and there was lymph node positivity in 13(62%) patients. Ten(48%) patients underwent pre-operative 18FDG PET-CT, but its use was not associated with any management changes. Three(15%) patients underwent neo-adjuvant and nine(43%) adjuvant chemotherapy (two patients were offered and declined) with platinum-based regimens.

Twelve(57%) patients died during the study period, all from disease recurrence. Median overall survival was 21 months (range 2–132 months) and there was no effect upon overall survival with the use of neo-adjuvant or adjuvant therapy.

**Conclusion:** Duodenal adenocarcinoma remains a rare disease and even when resectable the majority of patients have advanced disease (T3/4 and nodal involvement). Although this cohort is small, these data provide no evidence for the use of neo-adjuvant or adjuvant treatment. The addition of PETCT to standard imaging modalities appears to offer no additional benefit in this cohort but its use may have changed the management algorithm for some patients (not captured here) that were subsequently diverted away from a surgical pathway.

**P67**

**Long term results of non resectable intrahepatic cholangiocarcinoma after stereotactic radiofrequency ablation - salvage therapy or future option for primary treatment?**

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**Background:** Intrahepatic cholangiocarcinoma (ICC) is a highly malignant disease with surgery as the mainstay of treatment. 5 year survival is rare, depending on the stage of disease at diagnosis. Stereotactic radiofrequency ablation (SRFA) is minimally invasive non-surgical approach providing excellent results in expert hands. We wanted to evaluate treatment effects, complications and outcome of percutaneous stereotactic radiofrequency ablation of non-resectable intrahepatic cholangiocarcinoma.

**Methods:** Retrospective single center analysis of a consecutive series of non resectable ICC.

**Results:** 17 consecutive patients (twelve men and five women) with a total of 61 inoperable ICCs (26 initial lesions, 35 lesions newly detected during follow up), and two local recurrences underwent SRFA between December 2004 and June 2015. Two different radiofrequency ablation (RFA) devices with internally cooled electrodes were used. Tumor diameters ranged from 1 to 10 cm (median 2.1 cm). The efficacy of SRFA was evaluated by contrast-enhanced computed tomography or magnetic resonance imaging 1 month after treatment and then every 3 months. Further follow-up every 3 months revealed three local recurrences (9-8 %) (6/61), two of which were successfully retreated, resulting in a secondary technical effectiveness rate of 93-4% (57/61). One-, 3- and 5-year overall survival rates were 82.3, 64-7% and 47%, respectively. Five of 17 patients were still alive at the end of follow-up.

**Conclusion:** SRFA is effective in the treatment of unresectable ICC even if the tumor is large and located close to major vessels. SRFA shows a survival benefit compared to other palliative treatment options and may also be considered as the first-line local treatment of ICCs in selected patients.

**P68**

**Impact of operator on ERCP radiation dose**

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**Background:** ERCP uses ionising radiation, but the dose used and the variables affecting what dose is used are not well understood. We wished to assess this in our practice.

**Methods:** A prospective audit of ERCP practice was set up one year ago and patient identifiers were used to retrospectively gather radiation dose from the radiographers computerised records.

**Results:** Four hundred and fifty two consecutive ERCPs were assessed, 48 were excluded from analysis as no screening was used or the dose was not recorded leaving 404 cases for analysis. Of these the mean radiation dose was 833 micro-Grays per case.
On univariate analysis we assessed if first ERCP, successful cannulation, or ductal stone clearance affected dose and there was no significant difference. Indication did affect dose with 337 having stone disease with a mean dose of 81 micro-Grays and 30 having malignant stricture and a mean dose of 1306 micro-Grays (p=0.0-0.01).

Operator variability was also assessed by Kruskal-Wallis one way analysis of variance and the distribution of dose is not the same by operator. The lowest mean dose was 481 micro-Grays in 85 procedures by one endoscopist and the highest was a mean dose of 1332 micro-Grays in 37 procedures by another individual.

**Conclusion:** The dosage from a chest x-ray is 100 micro-Grays and from a CT abdomen/pelvis is 10,000 micro-Grays. If patients are having repeat procedures and CT scans they will receive a significant radiation dose during their hospital stay. Endoscopists should keep this in mind and remember to stop screening when not necessary.

**P69**

Postoperative morbidity after pancreaticoduodenectomy with vascular resection

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**Background:** Pancreaticoduodenectomy (PD) combined with mesenterico-portal vascular resection is a widely accepted treatment option for patients suffering from suspected pancreatic carcinoma or distal bile duct carcinoma. However, the clinical benefit is still controversially discussed.

**Methods:** We retrospectively collected data on morbidity and mortality from a prospective database in all consecutive patients who underwent pancreaticoduodenectomy with vascular resection at our center.

**Results:** Between January 2010 and December 2015 a total of 101 PDs were performed for malignancy of the pancreatic head. In 16 patients (15.8%) vascular resection was indicated due to local tumour extent (81-25% pylorus preserving, 12-5% Whipple, 6-25% total pancreatectomy). The following vascular resections were performed: pancreaticoduodenectomy with vascular resection (37.5%). R0 resection was achieved in 62.5% and R1 in 37.5%.

Postoperative complications were classified according to the Dindo-Clavien-classification. Major complications (grade 3 and more) occurred in 31-25% including one grade C pancreatic fistula (6-25%), three grade B postoperative hemorrhages (18-75%) and one grade C delayed gastric emptying (6-25%). Relaparotomy was necessary in two patients (12.5%) due to abdominal wound dehiscence and pancreatic fistula. Median postoperative hospital stay was 23-14 ± 13-4 days. In our series both in-hospital as well as 90-days mortality were 0%.

**Conclusion:** Perioperative morbidity in patients with PD and vascular resection is comparable to those without. In most cases were tumour adherence or partial infiltration is suspected exploratory laparotomy with a combined resection of the pancreatic head and the vein should be considered as long as other contraindications for resection such as broad infiltration of the hepatic artery are missing.

**P70**

Outcome of indeterminate liver lesions on CT scan in the background of patients with colorectal cancer

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**Background:** Hepatic resection offers the only chance of cure and prolonged survival in patients diagnosed with colorectal liver metastasis (CRLM). Great strides has been achieved over the past few decades in the management of these patients with improvements in imaging technologies that has helped in appropriate assessment and staging of the disease burden in the liver however, benign hepatic lesions are quite prevalent in the general population and some of these lesions are difficult to characterise on radiological imaging which affects their subsequent management.

**Methods:** Patients who had indeterminate liver lesions on CT scan on a background of colorectal cancer and discussed at our HPB MDT between Jan 2013 to Dec 2014 were included. Further diagnostic tests performed, progression on surveillance imaging and median surveillance time, and histology findings in resected cases were recorded.

**Results:** Fifty six patients were identified, of which 45% (N=25) presented with metachronous lesions. In the primary cohort 85% (N=48) had indeterminate lesions only while the rest had colorectal liver metastasis in addition to indeterminate lesions (N=8). In these 48 patients with indeterminate only lesions, 88% (N=42) went on to have an MRI scan, 6% (N=3) had a repeat CT and 6% (N=3) had a PET scan. In patients that had a MRI scan, the diagnosis was: benign (N=13); metastatic colorectal liver disease (N=11); and indeterminate (N=18). In patients that remained indeterminate on MRI, interval imaging (median 9 months, range 3-52) was performed in 16 patients while 2 patients had liver resection which their histology confirmed CRLM. In these 16 patients, surveillance imaging continued in 10 patients (one patient found to have a lesion suspicious of HCC, confirmed on biopsy) and liver resection was performed in 6 patients after interval imaging showed progression consistent with metastases. Overall, 8 (44%) patients of the original 18 patients that had indeterminate liver lesions on MRI had a diagnosis of colorectal liver metastases.

**Conclusion:** All patients with indeterminate liver lesions on CT scan in the background of colorectal cancer should be investigated further. Following MRI, almost half of these lesions were proven to be related to metastatic disease.

**P71**

Accuracy of ultrasound in the assessment of polyposis of the gallbladder

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**Background:** To assess the use of ultrasound scanning of the biliary tree in the assessment of presence of polyposis of the gallbladder and to compare the current practice of Arrowe Park Hospital in the treatment of gallbladder polyps with the available guidelines.

**Methods:** A retrospective interpretation of a prospectively collected database was conducted of all cholecystectomies completed at Wirral University Teaching hospital during a 1 year period between January and December of 2014. Patients were excluded if histological or radiological data were not complete. Radiological and histological data were accessed and contingency tables compiled to assess the accuracy, sensitivity, specificity, positive predictive value and negative predictive value of ultrasound for the assessment of gallbladder polyps.

**Results:** A Total of 677 cholecystectomies following ultrasound at our centre were performed in the time period. Of these, 45 patients were identified having gallbladder polyps on pre-operative ultrasound. Sensitivity was 90-9%, specificity was 95-1%, positive predictive value was 22-2% and negative predictive value was 99-8%. 100% patients who underwent cholecystectomy for gallbladder polyps met criteria for minimum size of polyp or polyps being multiple.

**Conclusion:** Ultrasound is a sensitive and specific method of detection of gallbladder polyps. However, the positive predictive value of this imaging modality is poor. Practice at Wirral University Hospital currently follows available guidance regarding the treatment of gallbladder polyps.
**P72**

Significance of R0 vs R1 resection on patterns of recurrence of colorectal liver metastases

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**Background:** Surgical resection of colorectal liver metastases (CRLM) provides the best chance of cure, with increasingly aggressive approaches resulting in a greater number of positive microscopic margins (R1). Studies have demonstrated more disease recurrence following R1 resection, however the pattern of these recurrences is rarely described. Although one would expect recurrent disease in this setting to be locally intrahepatic i.e. at the involved margin, anecdotal experience suggests this is not the case. R1 status has subsequently been proposed as a marker of poor biology over technical failure.

**Methods:** All patients undergoing resection of CRLM at a tertiary HPB centre during 2012 were included. A prospective database was retrospectively analysed for R0 vs R1 resection rates, disease free survival (DFS) over 4y follow up and patterns of recurrence.

**Results:** 115 patients underwent surgery for CRLM (76 male; 65y (25–86); median follow up: 38.5 months). Kaplan Meier analysis showed DFS data similar to the literature; median DFS following R0 and R1 resection was 18.3 and 17.7 months respectively. In the R0 group there were 9 patients with distant intrahepatic recurrence (13.2%) and 2 with local intrahepatic recurrence (2.9%) compared to 8 (19.0%) and 3 (7.1%) in the R1 group. Although there was no difference in the number of major vs minor resections between the R0 and R1 groups suffering intrahepatic recurrence, there were proportionally fewer anatomical resections in the R0 recurrence group (15.4%) compared to the R1 recurrence group (30.8%). This reflected the distribution of initial CRLM locations, with fewer central as opposed to peripheral lesions observed at initial resection in the R0 recurrence group (38.5%) compared to the R1 recurrence group (53.8%).

**Conclusion:** The survival data infers the studied cohort to be externally valid. Despite the small number of patients a clinically significant proportion of recurrences in the R1 group occurred distant to the resection margin. This suggests that R1 status following liver resection for CRLM resection is more an indicator of poor tumour biology than of technical failure. Inclusion of a larger population from the database and multivariate analysis to correlate R1 resection with other known indicators of poor biology would further strengthen this argument.

**P73**

Preoperative mapping and surgical technique for No Touch SMA first Pancreato-duodenumectomy: Initial experience

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**Background:** In the standard technique of pancreato-duodenumectomy (PD), the superior mesenteric artery (SMA) is approached following Kocherisation of the duodenum. This approach may increase dissemination of malignant cells in the portal circulation. Alternate approaches include no touch technique and SMA first approach. The aim of this paper is to report the pre-operative planning, operative technique, safety and feasibility of the combined no touch technique and SMA first approach (NTPD).

**Methods:** From May 2011 to January 2016, 80 patients were included in the study. 16 patients had the combined technique NTPD. The postoperative outcomes compared with that of 64 patients who had standard PD (SPD) by the same surgeon.

**Results:** The need for operative blood transfusion was less in the group who had NTPD, the median operative time for NTPD was 474 minutes, median hospital stay was 14 days which comparable to that for SPD. The rate of pancreatic leak was 25% compared to 22% for SPD and the reoperation rate was 6% and 7% respectively.

**Conclusion:** We conclude that NTPD is safe and feasible approach with acceptable short-term outcomes. Long term outcomes need to be studied in a large cohort to assess effectiveness of this technique.

**Comment:** A video presentation is also available for the NTPD technique mentioned in this abstract.

**P74**

Metastatic colorectal cancer: Implementation of progressive surgery with state-of-the-art chemotherapy leads to improved survival

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**Background:** Modern, multimodal chemotherapy regimens lead to improved survival for metastatic colorectal cancer patients in prospective trials. Studies further showed, that extensive liver surgery performed by specialists in high volume centers can give more patients access to curative treatment. Likewise, the implementation of cytoreductive surgery +/- hyperthermic intraperitoneal chemotherapy (HIPEC) may also prolong survival in selected cases. However, data uncovering “real life” practice and prognosis is scarce.

**Methods:** All patients presenting to our hospital with newly diagnosed metastatic colorectal cancer (synchronous or metachronous hepatic, pulmonary, abdomino-peritoneal or lymphatic metastasis) from 2003–2014 were included. Patients were categorized into palliative (group A) and curative (Group B) intent. We investigated the percentage of patients undergoing curative surgery in three periods (2003–2006, 2007–2010, and 2011–2014) to detect changes in the surgical and medical management over time. Factors influencing recurrence and survival were evaluated.

**Results:** Some 420 patients were included, 250 in Group A and 170 in Group B. The number of patients presenting with metastasis was consistent between the study periods, whereas the rate of curatively treated patients increased from 28% to 54.5% over time. This resulted in significantly better 5-year overall-survival of 13% versus 27% (p=0.017). Primarily this was a result of increasing liver resections, while chemotherapy-regimens did not substantially change.

**Conclusion:** Progressive surgery and modern, multimodal chemotherapeutic regimens represent the mainstream of improved survival in metastatic colorectal cancer patients within the last years. Specialized hepatic surgery, aggressive cytotoxic treatment and increasing centralization can result in increased rates of resectability and longer overall survival.

**P75**

Laevo gall bladder with accessory liver lobe: an unusual case of recurrent pancreatitis

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**Background:** Laevo gall bladder without situs inversus is a rare but known clinical entity. Majority of reported cases tend to be asymptomatic. We present an unusual case of recurrent pancreatitis in a patient who had a presumed open cholecystectomy 15 years previously. Laevo gall bladder was located in well formed accessory lobe of the liver.

**Methods:** A 52 year diabetic male presented with epigastric pain, jaundice, fever and markedly raised amylase levels. Patient had a history of similar self limiting episodes in the preceding 4 months. Surgical history included open cholecystectomy done via right sub costal incision in a semi rural primary care hospital about 15 years ago but there were no surgical details or pathology results available for review. Ultrasound showed dilated intrahepatic ducts and
raised possibility of an intact gall bladder. Magnetic Resonance Cholangiopancreatoscopy (MRCP) confirmed no cholecodolithiasis; however gall bladder with multiple calculi was visualised surrounded by an accessory lobe of liver. Accessory lobe appeared to have a well formed hepatic duct which joined the right and left hepatic ducts as a trifurcation. Triphasic CT scan confirmed the accessory lobe to have a separate venous and arterial supply.

**Results:** Patient was managed conservatively allowing pancreatitis to settle and laparotomy was performed once patient stabilised. Intraoperative findings confirmed a well formed accessory lobe with intact gall bladder extending along the falciform ligament in continuation with segment 3 and 4b of the left lobe of liver. The hilum of the liver was markedly shifted anteriorly towards the liver edge at the junction of accessory lobe with the left lobe. Portal vein of the accessory lobe arising from the left portal vein and Hartman’s pouch were localised and controlled. Cholangiogram performed through the Hartman’s pouch confirmed trifurcation of the primary confluence and resection of the accessory lobe was done along with the gall bladder.

**Conclusion:** Anomalies of the gall bladder are common but left sided gall bladders with well formed accessory lobes are rare and even rarer when they present with complications. Confluence of the cystic artery or accessory lobe ducts can be unpredictable and intra-operative cholangiogram should always be performed. Preferably these cases should be sent to a specialist centre for surgical management.

**Posters**

**Oesophago-Gastric**

**P76**

An Analysis of Eleven Years of Clinical Negligence Claims in Oesophago-Gastric Cancer in the United Kingdom

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**Background:** In the National Health Service (NHS), clinical negligence claims and associated compensations are constantly rising. Our aim was to identify the size, trends and causes of litigations claims in relation to Oesophago-Gastric (OG) cancer in the NHS.

**Methods:** Data requests were submitted to the NHS Litigation Authority (NHSLA) for the period of Jan 2003 to Dec 2013. Data were reviewed, categorized clinically and analyzed in terms of causes and costs behind claims.

**Results:** In this time period there were 163 claims identified from the NHSLA database. 95 (58.3 %) claims were successful with a pay out of £6-25 million. An increasing overall claim frequency and success rate were found over the last few years. Majority of the claims were from gastric cancer 84 (88.4%). The commonest cause of complaint in successful claims was delay/failure in diagnosis (21.1%) and treatment (17.9%). There were only 10.5% successful intraoperative claims, of which 50% were due to unnecessary or additional procedures.

**Conclusion:** The frequency and success rates of malpractice claims in OG cancer are rising. The failure or delay in diagnosing and treatment in OG malignancy is the common cause for successful litigation claims. The findings further reinforce the need to improve early diagnosis.

**P78**

Lack of Evidence for Stenting in Neoadjuvant Therapy for Curable Oesophageal Carcinoma

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**Background:** Oesophageal stents have become widespread practice in the palliative treatment of oesophageal malignant diseases for dysphagia. Safety and efficacy in the curative neoadjuvant setting while induction therapy is underway has not been evaluated despite its frequent use. Concerns have been raised about a low frequency of curative surgery and poor survival outcomes when stenting has been used as a pathway to neoadjuvant therapy.

**Methods:** A systematic review was undertaken to explore the evidence for this management in studies identifying patients with oesophageal cancer undergoing stent implantation prior or during neoadjuvant chemotherapy, where curative intent resection was planned from 1949 up to December 2014. Specific primary outcome was survival and the secondary outcomes sought were adverse events and progression to resection. The event rate and confidence intervals (CI) were calculated. All data was reported and statistics calculated on patients identified in the studies as curable on an intention to treat basis.

**Results:** Search identified 425 potentially relevant reports and articles where all patients had undergone stenting in neoadjuvant therapy, of which 14 studies (n=430 patients) met the inclusion criteria for analysis. A total of 430 patients were identified undergoing stenting and neoadjuvant therapy with intention to cure. Resection was able to be determined in 250 patients in a highly heterogeneous group and was achieved in 46-9% of patients (95% CI: 22.8 to 71.8). The variability of the resection proportion in the reports was very wide. Adequate data evaluating complete resection was available only in 3 studies. Upon intention to treat for cure, 119 patients had enough data to assess resection and 56 ended up having complete surgical excision for a proportion of 47%.
Analysis of the rate of resection was also highly heterogeneous (p=0.0001, 95% CI 86-86 to 96.38) and the total random effects was 35-3% (95% CI 8.3 to 68.9).

**Conclusion:** In poor studies with small numbers there is little evidence for this practice and perhaps a low resectability rate and elevated cancer recurrence compromising survival outcomes. Oesophageal stenting in the neoadjuvant situation cannot be supported or rejected by current data.

**P79**

**Rapid Infrared Mapping for Highly Accurate Automated Histology in Barrett’s Oesophagus**

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**Background:** Barrett’s oesophagus (BO) is a premalignant condition that can progress to esophageal adenocarcinoma. Endoscopic surveillance aims to identify progression at an early, treatable stage, but generates large numbers of tissue biopsies – a high workload for histopathology. Fourier transform infrared (FTIR) mapping was used to develop an automated histology tool for detection of BO and Barrett’s neoplasia in tissue biopsies.

**Methods:** 22 oesophageal tissue samples were collected from 19 patients, and frozen tissue sections cut to allow pathology review and FTIR imaging of contiguous sections. 45 mid-IR images were measured on an Agilent 620 FTIR microscope with Agilent 670 spectrometer. Each image measured 140 μm x 140 μm region in 12 minutes, using 1x1 μm pixel size and 64 scans/pixel.

Principal component analysis (PCA) fed linear discriminant analysis (LDA) was used to build classification models based on spectral differences, which were then tested using leave one sample out cross validation.

**Results:** Classification of normal squamous (NSQ) samples versus ‘abnormal’ samples (any stage of Barrett’s) was performed with 100% sensitivity and specificity. Using a 3-group model to differentiate NSQ, BO and neoplastic Barrett’s (dysplasia or adenocarcinoma, DYS/AC), neoplastic Barrett’s was identified with 95.6% sensitivity and 86.4% specificity. Key biochemical differences were identified by their spectral signatures. High glycogen content was seen in NSQ tissue, high glycoprotein content was observed in glandular BO tissue, and high DNA content in DYS/AC samples.

**Conclusion:** Highly accurate pathology classification can be achieved with FTIR measurement of frozen tissue sections in a clinically applicable timeframe. The biochemical differences between pathology groups which underpin these classification models have been elucidated.

**P80**

**A multicentre prospective observational cohort study to determine factors associated with postoperative pneumonia in patients undergoing oesophago-gastric resections**

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**Background:** Oesophago-gastric resections are associated with high levels of morbidity, with postoperative pneumonia (POP), one of the commonest reported complications. This study is aimed at determining the factors associated with pneumonia in a large multicentre cohort using strict definitions to allow for the robust comparison between units.

**Methods:** 11 UK centres recorded patient demographics, operative details and post operative information including complications for consecutive patients during a 3-month period using strict definitions for POP.

**Results:** 190 patients were included in the study, 120 undergoing oesophagectomies and 70 patients undergoing gastrectomies. In patients undergoing gastrectomy 18% of patients were diagnosed with a POP. No single feature, including obesity (p=0.88), ASA (p=0.70), diagnosis of COPD (p=0.21), smoking status (p=0.73), centre (p=0.49), nor laparoscopic versus open approach (p=0.59), was associated with POP on univariate analysis suggesting the cause is multifactorial. In contrast in multivariable analysis; age, performance status, ASA, Charlson comorbidity score, diagnosis of COPD, and laparoscopic versus open approach all had a role to play.

42% of patients undergoing oesophagectomy developed a POP. In univariate analysis this was not associated with obesity (p=0.24), ASA (p=0.34), smoking status (p=0.79), laparoscopic versus open approach (p=0.72) nor transhiatal versus thoracotomy (p=0.32) but was associated with a prior diagnosis of COPD (p=0.017) and centre (p=0.0004). In multivariable analysis only a previous diagnosis of COPD and centre remained significant predictors of POP.

**Conclusion:** Whilst classically POP has been associated with obesity and laparoscopic approach was thought protective this was not borne out in this data. Circumventing one lung ventilation did not significantly reduce the incidence of infection. In oesophagectomies, the centre performing the surgery was the factor most significantly associated with pneumonia suggesting that overall postoperative management may have a very important role to play in avoiding this complication. This highlights the need to share best practice and optimise patient pathways.

**P81**

**Do we neglect venous thromboembolism risk during neoadjuvant chemotherapy for oesophago-gastric cancer?**

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**Background:** The importance of prophylaxis against venous thromboembolism (VTE) is well established in patients admitted for cancer surgery. Patients with upper-gastrointestinal cancer are at increased risk of VTE during neoadjuvant chemotherapy, and this may necessitate additional invasive procedures such as caval filter insertion. However, VTE prophylaxis during chemotherapy is not routine. We aimed to establish the risk, and impact of, VTE during neoadjuvant chemotherapy for oesophago-gastric cancer.

**Methods:** A retrospective analysis of oesophago-gastric cancer resections in our institution in the last 10 years. Clinical, operative and histological data was retrieved from an institutional database and casenote review. VTE incidence was stratified by tumour location, stage, and use of neoadjuvant chemotherapy. Uni- and multivariable analysis was performed to identify predictors of VTE and its impact on length of stay (LOS), post-operative complications and survival.

**Results:** 941 patients underwent resection of oesophageal or gastric cancer in the study period. 47 patients required pre-operative caval filter due to VTE. Overall VTE incidence was 4% for oesophageal and 6.4% for gastric cancer. 512 patients received neoadjuvant chemotherapy. VTE incidence in this group was significantly higher for gastric compared to oesophageal cancer (16.5% vs. 5.6%, p = 0.002). VTE risk increased with age (p = 0.023) and tumour stage (p = NS). VTE was associated with reduced survival in Stage 2 (p = 0.017), but not in Stage 3 or 4 disease. VTE was not associated with increased complications or LOS.

**Conclusion:** Neoadjuvant chemotherapy significantly increases the risk of VTE in gastric, but not oesophageal cancer. The risks associated with VTE warrant re-consideration of thromboprophylaxis in this high risk group.
Background: The aim of this study was to determine the outcome of cholecystectomy and anti-reflux surgery in Wales over a 8-year period.

Methods: Details of patients who underwent cholecystectomy and anti-reflux surgery across Wales from 2007 to 2015 were analysed from the Patient Episode Database for Wales. Outcome measures were length of hospital stay, readmission and mortality rates.

Data for cholecystectomy (n. 27873, 92% (2521) laparoscopic) and anti-reflux surgery (n. 1614, 80% (1288) laparoscopic) was collected from the Patient Episode Database for Wales (PEDW) from 2007 to 2015.

Results: Between 2007 and 2015, laparoscopic and open cholecystectomies were performed in 2521 (92%) and 2152 (8%) patients respectively. The mean length of hospital stay, readmission and mortality rates were 1.9 vs. 7 days (p<0.001), 1.5 vs 2.3 % (p = 0.004) and 0.6 vs 1.4% (p<0.001) in the laparoscopic and open groups respectively.

Laparoscopic and open anti-reflux surgery were performed in 1291 (80%) and 323 (20%) patients respectively. The mean length of hospital stay, readmission and mortality rates were 2.9 vs. 18.7 days (p<0.001), 0.6 vs 2.2% (p = 0.011) and 0.2 vs 0.6% (p = 0.15) in the laparoscopic and open groups respectively.

Conclusion: Laparoscopic cholecystectomy and anti-reflux surgery are performed safely in Wales.

P85

A POEtic gliMPse of the future

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Background: Achalasia is an uncommon dysmotility disorder characterised by distal oesophageal aperistalsis and failure of relaxation of the lower oesophageal sphincter. Treatment is directed at decreasing the pressure at the lower oesophageal sphincter and options have classically involved endoscopic balloon dilatation, injection of botulinum toxin or laparoscopic Heller myotomy. Percutaneous endoscopic myotomy (POEM) is a novel technique which involves performing a myotomy endoscopically after creating a submucosal space. Despite being widely adopted in Europe and Japan, its introduction into the UK has been limited. We describe one of the first series of POEM in the UK, assessing its safety and efficacy.

Methods: POEM was performed under general anaesthesia with endotracheal intubation. The procedure involved mucosal entry, submucosal tunnelling, myotomy and clip closure of mucosal defect. The endoscopic functional luminal imaging probe (EndoFLIP) was used to assess oesophageal pressures at balloon volumes of 30 and 40ml at the start and end of procedure. Eckardt scores were prospectively recorded at the time of addition to waiting list and at follow up, 8 weeks post procedure.

Results: 11 patients, median (IQR) age 42 (41–56) years underwent POEM at our institution. These included 3 with Type I achalasia and 8 with Type II achalasia, 7 males and 4 females. Median (IQR) length of hospital stay was 3 (3–5) days. Median (IQR) Eckardt score was 9 (6–9.5) preprocedure and 2 (0–3) post procedure. Median (IQR) cross sectional diameter at 30ml volume was 11.7 (9.1–13) mm² at start and 12.4 (11.8–13.2) mm² at end of procedure. Median (IQR) cross sectional diameter at 40ml volume was 14.5 (11.2–15.7) mm² at start and 16.6 (16.4–17) mm² at end of procedure.

There were no significant complications.

Conclusion: Evidence from one of the early series of endoscopic myotomy in the UK confirms its safety and efficacy in the treatment of achalasia.
Methods: All patients who underwent oesophagectomy and gastrectomy with a curative intent for cancer in our institution were retrospectively reviewed over a 12-month period from April 2014 to March 2015.

Results: 60 resection specimens were reviewed (45 oesophago-gastrectomies & 15 total / subtotal gastrectomies) over a 12-month period (11 females & 49 males). Specimens were sent fresh to histopathology lab. 35 had MFD alone performed and 25 had combination of MFD + SFB. Combination technique using SFB + MFD had a mean yield of 31.6 - which was greater than 25.9 for MFD alone. Furthermore, SFB + MFD cases were associated with higher numbers of positive nodes (4-0) than MFD cases (1-3). Neoadjuvant therapy was associated with lower overall lymph node yield and a higher yield of positive lymph nodes.

Conclusion: The combination of using SFB with MFD resulted in a higher lymph node yield, which facilitates better staging as well as providing more accurate prognosis for patients. This technique is particularly useful to maximise lymph node yield in patients receiving neoadjuvant therapy, where overall lymph node yield is poor. Collaboration and good communication between surgeons & pathologists is important in adopting suitable techniques to maximise lymph node yield following such surgery along with enhancing quality of service.

P88
Identification of molecular mechanisms contributory to malignant transformation of Barrett’s metaplasia – a comparative study
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Background: Barrett’s metaplasia is a predominant aetiological factor for the rising incidence in adenocarcinoma of gastro-oesophageal junction (GOJ). However, the molecular mechanisms behind the malignant transformation of Barrett’s metaplasia are poorly understood.

Chaperone proteins and redox enzymes (oxidoreductases and disulphide isomerasers) are involved in controlling protein folding and disulphide bond forma-
tion and are therefore key to protein secretion, metastasis, angiogenesis and the modulation of the redox environment. The function and expression patterns of redox enzymes and chaperone proteins in epithelium of Barrett’s segment were studied.

Methods: Using immunohistochemistry and western blot expression studies (OE19, OE21 and OE33 oesophageal cell lines), epithelial tissues of normal, Barrett’s and malignant areas in patients with GOJ adenocarcinoma were compared with those from controls.

Results: Our findings suggest that the endoplasmic reticulum (ER) oxidore-
ductase Ero1Alpha and other members of the Protein Disulfide Isomerase family are upregulated during the transition from Barrett’s oesophagus to gastrointestinal cancer. Coupled with evidence that ER resident glutathione peroxidases are downregulated in Barrett’s, the data suggests that dysregulation of ER redox networks may be involved in generating oxidative stress that contributes to the development of gastrointestinal cancer.

Conclusion: Further exploration of ER chaperone and redox enzyme function in the GI tract will help us to evaluate the potential of these proteins as biomarkers and therapeutic targets in Barrett’s oesophagus.

P90
A multicentre cohort study to redefine and validate pathological assessment of response to neoadjuvant therapy in treated oesopha-

gastic adenocarcinoma
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Background: A universally accepted measure of significant response to neoadjuvant therapy in oesophageal adenocarcinoma (OAC) is required to accurately stratify patients for precision treatment. Our study aimed to define the current utility of Mandard tumour regression grade (TRG) in UK clinical practice, assess its reliability, and validate a clinically meaningful endpoint of significant pathological response.

Methods: A questionnaire assessed current clinical use of neoadjuvant response assessment in 11 UK centres. 7 centres provided prospectively collected clinicopathological data from patients with treated OAC (2001–2016). Pathological primary tumour response to neoadjuvant therapy was assessed using TRG (TRG 1: complete pathological response, to TRG 5: no evidence of response) in local centres, with blinded validation of scoring. Lymph node downstaging was assessed by comparing clinical and pathological staging (cN+ to ypN0).

Results: Of 11 centres 64% (n = 7) used response to neoadjuvant therapy to guide adjuvant treatment. TRG was recorded by 73% (n = 8/11) of centres with 65% (n = 5/8) using TRG 1–3 to define a significant response to therapy. Of 1370 patients studied, TRG was recorded in 92% (n = 1265). A significant overall survival advantage was seen with TRG 1 and 2 (responders, n = 189; 15%) compared to TRG 3, 4 or 5 (non-responders, n = 1069; 85%) (mean overall survival; TRG 1–2: 10-4 years, 95% CI: 9-4-11-3 (median not yet reached) vs TRG 3–5: 4-8 years, 95% CI: 4-3-5-2, p < 0.0001). A subset of non-responders (TRG 3–5) demonstrated lymph node (LN) downstaging with a subsequent survival advantage (mean overall survival; TRG 3–5 with LN downstaged, n = 155; 7-9 years, 95% CI: 7-0-8-7 vs TRG 3–5 LN not downstaged, n = 581: 3-2 years, 95% CI: 2-9-3-6, p < 0.0001).

P89
Patients knowledge of oesophageal cancer and its risk factors is poor; results of a pilot study from a single Scottish centre
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Background: Oesophageal cancer (OC) has a poor prognosis and is often
diagnosed late. Public awareness of OC and the symptoms associated with it is poor and this may contribute to delayed presentations and advanced stage at diagnosis. Patients often have had symptoms for many months before presenting.

Methods: 101 patients attending for oesophagastroduodenoscopy in a 14 working day period at a single centre consented to a face to face interview conducted by a single investigator. Patients were questioned on their knowledge of the oesophagus, Gastro-Oesophageal Reflux Disease (GORD), Barrett’s oesophagus, risk factors for OC, and the association between Barrett’s and OC. Their knowledge was defined as nothing, vague or complete understanding, determined by the interviewer. Scottish Index of Multiple Deprivation (SIMD) quintile was recorded from post code look up. Data was recorded and statistics analysed in Microsoft Excel and GraphPad Prism version 6.

Results: The majority of patients had complete knowledge of the oesophagus (74%) and GORD (58%) however knowledge of Barrett’s was poor (14%). Knowledge of (≥ 1) risk factors for OC was poor (23%). Only 7% of our patients knew of the association between Barrett’s and OC. There were no statistically significant differences in knowledge based on sex or SIMD quintile; however 41-6% of this sample were in quintile 1 compared to only 13-9% in quintile 5. Patients who did have awareness of Barrett’s and its association with OC reported they gained this knowledge from having a diagnosis themselves (36%); NHS leaflets (21%); and online/social media (7%). No patients had knowledge about the conditions from television, newspapers or magazines.

Conclusion: Public awareness of OC and its risk factors are poor. There is little information in the Scottish media about it. This may be an area which can be improved in an attempt to decrease the percentage of advanced disease at presentation.

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**Conclusion:** Variability in the application of TRG to guide treatment in OAC exists in the UK. This large multi-centre UK cohort study of contemporary practice validates responders to neoadjuvant therapy (TRG 1–2) with overall survival double that of non-responders (TRG 3–5). Assessment of response should not be confined to the primary tumour as a cohort of apparent non-responders gain a survival advantage by lymph node down staging. These robust criteria will aid the development of biomarkers to predict response.

**P91**

A report on the current outcomes of patients who undergo surgical excision of gastrointestinal stromal tumours of the gastric type

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**Background:** Gastrointestinal stromal tumours (GISTs) are neoplasms of the gastric and intestinal mesenchymal tissue and are the most common gastrointestinal sarcomas. GISTs occur mainly in the stomach and small bowel but can, in rarer cases, present elsewhere within the abdomen. Outcomes in the period before and after the introduction of tyrosine kinase inhibitors are not widely reported.

**Methods:** All patients who underwent excision of a GIST between January 1998 and December 2014 were identified from a prospectively collected database. For each patient the following data were collected: length of hospital stay, method of surgical excision, age at diagnosis, recurrence, adjuvant therapy, death related to the GIST and specific details of the tumour pathology including the degree of necrosis, mitotic rate and mutational analysis. Of these patients, only those with gastric GISTs were included in this report.

**Results:** There were 96 patients operated on for GIST excision: 84 gastric GIST; 12 intestinal and other GISTs. For the gastric GISTs 83% (77) underwent an open surgical procedure, 89–1% (73) had the GIST removed laparoscopically and 2–4% (2) of the excisions that began laparoscopically were converted to an open procedure. Overall survival in the gastric GIST group from the day of surgery to April 1st 2016 was 90–5% (76) with a median follow up of 3 years 10 months. Sixty-six (78–6%) of patients are alive without evidence of recurrence at latest follow-up. Mutational analysis was completed in 69–0% (58) of the gastric GIST sample and revealed mutations in the KIT gene (exon 9, 2; exon 11, 33), PDGFRA gene (exon 14, 2; exon 18, 15), wild type tumours with no mutations (5) and a failed result (1). Imatinib was initiated in 20 (23–8%) patients (adjuvant therapy, 16; neo-adjuvant therapy, 8).

**Conclusion:** Post-operative survival of patients diagnosed and treated for gastric GISTs continues to improve with the figure for this series being higher than in previously reported studies (73%). This is likely to be the result of the involvement of a specialist team and due to the increasing use of tyrosine kinase inhibitors. With the availability of mutational analysis and adjuvant therapy such as Imatinib these survival rates are likely to improve further.

**P92**

The impact of a dedicated research nurse on recruitment to clinical trials

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**Background:** A significant challenge to multi-centre clinical trials is recruitment of patients. Under recruitment can lead to significant delays in trial completion with resultant consequences on trial costs and unanswered questions. Novel interventions to improve recruitment need to be developed to improve success of clinical trials.

**Methods:** This study prospectively analysed the impact of a dedicated research nurse on overall number of patients recruited to clinical trials each year for three consecutive years starting from April 2013. The primary aim was to assess the number of patients recruited to a clinical trial with secondary outcomes being attendance at Upper Gastro-intestinal (UGI) multi-disciplinary team (MDT) meetings and participation of the unit in multi-centre clinical trials.

**Results:** From 1st April 2013 to 31st March 2014, 20 patients were recruited to three clinical trials. From 1st April 2014 to 31st March 2015, 32 patients were recruited to five clinical trials. From 1st April 2015 to 31st March 2016, 83 patients were recruited to seven clinical trials. Over this period of time, the centre was joint top recruiter nationally for two out of six clinical trials and within the top third in two others. The attendance of the research nurse at the weekly UGI MDT over the last 12 months was 69%.

**Conclusion:** The previous three years have seen a substantial rise in the number of patients and clinical trials being offered at the centre. This may be due to a regular presence of a research nurse at UGI MDT meetings, despite not being a core member, facilitating early identification of potential patients. An added benefit is an increased awareness of eligible projects, which facilitates clinician-led identification and enrolment to clinical trials. This has substantial potential in reducing failure of recruitment. Consideration should be given to addition of this role to the core membership of UGI MDT.

**P93**

Improved outcomes for oesophageal perforations

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**Background:** Oesophageal perforations are associated with a high morbidity and 30% 30 day mortality in England.

**Methods:** Retrospective cohort study of all patients referred to a tertiary oesophago-gastric centre with a diagnosis of Boerhaave's syndrome, iatrogenic oesophageal perforation and spontaneous pneumomediastinum were examined from a database of all patients referred with suspected oesophageal perforation from 22/7/2006 to 1/6/2016. In-patient mortality was examined.

**Results:** The cases have been subdivided into: 1) True Boerhaave's syndrome, 2) iatrogenic perforation, 3) pneumomediastinum with no oesophageal defect on OGD or contrast study and 4) oesophageal perforation from ingestion of a sharp object.

There were 47 cases of Boerhaave's syndrome, 39 iatrogenic perforations and 18 cases of pneumomediastinum with no oesophageal defect. There were two cases of oesophageal perforation secondary to ingested sharp objects. There were 8 deaths in the Boerhaave's group (17–0%) and 4 of these cases were treated with palliative intent from the outset (2 advanced oesophageal cancer, one with extensive metastatic colorectal cancer and one patient who was 95 years old with established multivisceral failure at the time of diagnosis). There were 5 deaths in the iatrogenic perforation group (12–8%) of whom two were treated with palliative intent only and no mortality in the pneumomediastinum with no oesophageal defect group or the two patients who had ingested sharp agents. The mortality for patients with detected oesophageal perforation was 14–7% overall. The mortality in patients treated actively for detected oesophageal perforation was 8–5%.

**Conclusion:** Low mortality can be achieved for suspected oesophageal perforations at a tertiary centre, however there is a significant morbidity associated with treatment and high resource utilisation required to achieve these outcomes. Some patients are not appropriate for active treatment due to futility of measures such as multiorgan support or the prognosis of their comorbid disease.
**P94**

Bone disease in patients after surgery for oesophagogastric (OG) cancer – a national survey of screening, monitoring and management practices

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**Background:** Patients who have undergone surgery for OG cancer are at risk of developing bone disease due to their treatment, poor dietary intake, malabsorption, weight loss and the use of proton pump inhibitors. No specific guidance on monitoring for bone disease in these patients exists. The aim of this survey was to scope national practice around screening, monitoring and management of bone disease.

**Methods:** In February 2016, a 10 item questionnaire was sent out via email to members of the Association of Upper Gastrointestinal (GI) Surgeons and the British Dietetic Association’s Oncology group.

**Results:** There were 95 respondents; 46% were surgeons, 39% dietitians and 15% clinical nurse specialists. Only 13% reported monitoring for bone disease. None of the respondents were using a screening tool to detect bone health issues. Serum vitamin D and corrected calcium levels were the most common blood tests used for monitoring (ordered by 34% and 35% of respondents respectively). Other blood tests being used included serum and bone specific alkaline phosphatase and parathyroid hormone (ordered by 22%, 4% and 3% of respondents respectively). There was no consensus as to how often these levels should be checked; the responses varied from three monthly to ad hoc. Only 7 respondents recommended the use of dual energy X-ray absorptiometry to monitor bone health but again there was no agreement on how frequently this should be performed. Fifty six percent of respondents reported referring patients whom they had concerns about bone health to an appropriate specialist. These specialisms were reported as rheumatology, orthopaedics and endocrinology.

**Conclusion:** The results of this survey reflect the dearth of literature and guidance on monitoring and management of bone disease in patients after surgery for OG cancer. Bone disease may negatively impact on the quality of life of patients and have implications for healthcare resources. More research is required to elucidate on the prevalence of bone disease in this high risk group of patients, its impact on outcomes, and on how to prevent, screen and manage the problem.

**P96**

Detection of Barrett’s Neoplasia In Oesophageal Cells Using Infrared Spectroscopy

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**Background:** Barrett’s oesophagus (BO) is a recognised precursor to adenocarcinoma, with endoscopic surveillance programs established worldwide. However, the majority of cases of adenocarcinoma present in patients outside surveillance. Non-endoscopic cell collection devices have recently been developed with the aim of population screening for BO. Automated analysis of collected cells would allow wide-scale population screening. Fourier transform infrared (FTIR) mapping was evaluated as an automated tool for detection of BO and Barrett’s neoplasia in oesophageal cell samples.

**Methods:** Cytology brushings were collected at endoscopy, cytopspun onto slides and FTIR maps measured. An automated cell recognition program was developed to identify individual cells on the slide based on their spectral signature. Cytology review and contemporaneous histology was used to inform a training dataset containing 141 cells from 17 patients. A classification model was constructed using principal component analysis (PCA) fed linear discriminant analysis (LDA), then tested using leave one sample out cross validation (LOSOOCV). Applying this training model to whole slide samples, a threshold voting system was used to classify samples according to their constituent cells.

**Results:** Across the entire dataset of 115 FTIR maps from 66 patients, whole samples were classified with sensitivity and specificity respectively as follows: normal squamous 79.0% and 77.0%, non-dysplastic Barrett’s 31.3% and 100%, and neoplastic Barrett’s 83.3% and 54.2%.

**Conclusion:** Analysis of oesophageal cell samples can be performed using FTIR with reasonable sensitivity for Barrett’s neoplasia, though poor specificity with the current technique. The poor sensitivity for non-dysplastic Barrett’s would prevent its use as a screening tool. However a high sensitivity for dysplasia would potentially allow this technique to replace endoscopic surveillance in patients with known BO.

**P97**

Specialist perioperative dietetic support for patients undergoing oesophagectomy and total gastrectomy

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**Background:** 78.9% of oesophageal cancer patients are malnourished. Malnutrition leads to higher rates of postoperative morbidity. Additionally 90% lose 5% body weight within 3 months of surgery with over 15% loss in 16%.

**Methods:** Consecutive patients from November 2014 to March 2015 participated in a standardised ERAS programme with enhanced dietetic support incorporating review at diagnosis, preoperatively, carbohydrate loading, ITU, ward and outpatient at 2, 6, 12, 24 and 48 weeks after discharge, with telephone support. Outcomes measured were weight, BMI, PG SGA, hand grip strength, anxiety and depression levels and length of stay (LOS). Outcomes were compared to an age and sex matched cohort from 2013.

**Results:** In 2013 17% had preoperative dietetic review, no patients received carbohydrate loading, and postoperative ITU, ward and outpatient review was infrequent and not standardised. Of 29 patients who participated in the enhanced programme 100% were seen preoperatively with increase in hand grip strength by 1.5kg, weight gain 0.5% body weight, reduced PG SGA score (mean 1-6), reduced feeding jejunostomy insertion rate. Postoperatively 100% were reviewed on day 1, and a mean of 3.5 times per week on the ward. Anxiety and depression levels were reduced and LOS was reduced by 5 days.

**Conclusion:** Implementation of enhanced perioperative dietetic support for patients undergoing oesophagectomy and TG is feasible. The outcomes demonstrate improved nutritional profiles with a trend to a reduction in the need for adjunctive feeding. Pathways to standardise perioperative patient care and infrastructure with specialist multidisciplinary team member collaborative working should be evaluated and implemented in the UK to optimise patient outcomes following major oesophago gastric surgery.

**P98**

A comparative audit of post oesophagectomy analgesia suggests an alternative: the time has arrived for a randomised control trial?

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**Background:** Excellent analgesia following oesophagectomy has enhanced recovery. Thoracic epidural analgesia (TEA) has been the gold standard regimen despite its potential to cause to hypotension. Use of inotropes may cause anaesthetic ischaemia. Excessive intravenous fluids cause cellular oedema. An analgesia regimen that minimised these complications could further enhance recovery.

**Methods:** A comparative retrospective audit of all patients undergoing Ivor Lewis oesophagectomy in a single surgeon private practice from 2000 to 2013 was conducted. The earlier TEA group received low dose bupivacaine with fentanyl 2ug/ml by infusion(n = 21). The Novel Analgesia Group (NAG) received...
an infusion of 0.2% ropivacaine via bilateral pre-peritoneal and right thoracic paravertebral catheters at a total of 15 ml per hour (n = 21).
Inotrope requirement, mean pain scores, episodes of respiratory depression, excessive sedation, reintubation, reoperation were recorded for the first 5 postoperative days. Time to mobilisation, time in intensive care, length of stay and 30-day mortality were also compared.

Results: Inotrope use in the NAG was 29% less (p = 0.03) than the TEA group. The mean intensive care stay was reduced by 2-4 days (p = 0.03), reintubation rate (p = 0.01) and time to first mobilisation (p = 0.03) were also reduced in the NAG. Pain scores were comparable in both groups as were the other outcomes examined.

Conclusion: The NAG demonstrated similar analgesia to the TEA group, with a reduction in inotrope requirements, intensive care stay and more rapid mobilisation. There is enough evidence to justify a randomised controlled trial of this technique.

P99

Survival according to the Modified Lauren Classification after Gastric Cancer Surgery in a UK Cohort
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Background: Over the decade, the incidence of gastric cancer in the UK is decreasing, with more marked reduction in distal carcinomas, and a trend to more proximal tumours. The Lauren histopathological classification into intestinal (I) and diffuse (D) types of gastric carcinoma has been modified to include the anatomical location of intestinal types into proximal and distal, differing in gene expression profiles. The aims of this study were to compare the survival of a UK cohort of patients undergoing surgery for gastric cancer using the Modified Lauren Classification system and assess prognostic factors influencing outcome.

Methods: A retrospective cohort study was performed on 217 gastric cancer patients undergoing surgery at St Thomas’ Hospital from 2005–2014. The patients were categorised into diffuse (D) and Intestinal (I) types, subdivided into proximal intestinal (PI) and distal intestinal (DI). Characteristics of each group were analysed and the primary outcome measure was overall survival (OS). Cox proportional hazards models providing hazard ratios (HR) and 95% confidence intervals were performed for factors affecting prognosis.

Results: A total of 217 patients underwent gastric cancer surgery, of which 145 were men (67%), mean age 67 years (range 26–92). Histological analysis subdivided patients into 80 diffuse and 137 intestinal cases, which were subdivided into 96 PI and 41 DI. Mean follow up was 44 months (SD 37), with 5 patients excluded due to missing data. Mean OS was 114.6, 96.4 and 57.9 months, respectively in PI, DI and D groups. No major differences in stage specific outcomes examined.

Conclusions: In our cohort, patients with diffuse type gastric carcinoma had poorer survival compared to intestinal type, with no significant differences found between patients with proximal and distal intestinal tumours.

P101

Systematic review and meta-analysis of surgical treatment of non-Zenker’s oesophageal diverticula
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Background: Oesophageal diverticula (OD) are rare outpouchings of the oesophagus which may be classified anatomically as pharyngeal (Zenker’s), mid-oesophageal and epiphrenic. While surgery is indicated for symptomatic patients no consensus exists regarding the optimum technique for non-Zenker’s OD and the aim of this study was to determine contemporary outcome by systematic review and meta-analysis.

Methods: PubMed, MEDLINE and the Cochrane Library (January 1990 to January 2016) were searched for studies reporting surgical outcomes in patients with non-Zenker’s OD. Primary outcome measure was the rate of staple-line leakage and secondary outcomes were morbidity, mortality, recurrence and symptoms of reflux.

Results: Twenty-five observational studies involving 511 patients (259 male, median age 62 years) with mid-oesophageal (n = 53) and epiphrenic OD (n = 458) who had undergone surgery [thoracotomy (n = 252), laparoscopy (n = 204), thoracoscopy (n = 42), laparotomy (n = 5)], combined laparoscopy and thoracoscopy (n = 8) were analysed. Myotomy and an anti-reflux procedures were performed in 437 (85.5%) and 342 (69.3%) patients respectively. Overall pooled staple-line leak rates were reported in 13.3% (95% CI 11.0% - 15.7%, p < 0.001) and was less common after myotomy (12.4%) compared with non-myotomy (26.1%, p = 0.002). A median follow-up of 46 months, the pooled incidence of reflux symptoms was similar irrespective of whether an anti-reflux procedure was performed (19.0%) or not (21.0%, p = 0.243).

Conclusion: No consensus exists regarding the surgical treatment of non-Zenker’s OD but staple-line leakage is common and is reduced significantly by myotomy.

P102

PREPARE: A multi-dimensional personalized prehabilitation program in patients undergoing surgery for oesophageo-gastric cancer
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Background: Prehabilitation programmes are based on a ‘one-size-fits all’ model. The aim of this study is to evaluate the impact of a multi-modal, personalised pre-habilitation programme that starts prior to commencement of neoadjuvant chemotherapy.

Methods: Data is collected at diagnosis to assess physical (Metabolic equivalent units, METS), psychological (self-efficacy) and social status. This data is used to personalize prehabilitation programmes. Exercises are either: hospital based and supervised (Group A); home based with ‘touch points’ (Group B) or a combination of home and hospital based (Group C). Psychological interventions are provided based on screening results.

Results: 51 patients undergoing oesophagectomy and total gastrectomy have been included in the analysis. 5 in Group A, 30 in Group B, 16 in Group C. For the whole cohort there were improvements in METS (3.84 and 3.92) and self efficacy (46 and 50) but not for 30 sec chair to stand (14 and 14).

Patients in group A had a lower METs as compared to Groups B and C (3.8 vs 3.8, 3-8) but there was no difference in other physical and psychological measures. The median number of gym visits was 12 (range 9–41) in Group A and 10 in Group C (2–21). Further analysis in Group C revealed that there were no differences based on the number of gym visits.

Conclusion: PREPARE resulted in improvements in physical and psychological functioning of patients with no difference between the home based and hospital based programmes. Tailored prehabilitation programmes are likely to have equivalent benefits to rigidly structured and supervised exercises.
P103

Home remote monitoring (HRM) of patients on enhanced recovery programmes (ERP) after Oesophago-gastric (OG) Cancer Surgery: a feasibility study

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Background: Home Remote Monitoring (HRM), involves direct data transfer between the patient at home and the hospital. Functional and physiological status can be monitored in the pre and post-operative period. This study aims to establish the feasibility of HRM in patients undergoing prehabilitation and enhanced recovery for OG surgery.

Methods: A survey was carried out among patients with OG cancer to evaluate use of smartphones and apps. Patients were equipped with smartphone compatible monitoring devices. Activity (steps), weight, heart rate and oxygen saturations were automatically uploaded to the ‘iHealth’ app pre and post-operatively. A survey assessed overall patient experience with HRM.

Results: 38 patients (mean age-74) undertook the survey. 66% owned and used a smartphone and 60% had home internet access. 55% were familiar with the use of Apps. 15 patients were provided with the HRM devices. HRM data was successfully recorded for 3-7 weeks. Activity widely varied across the patient group and correlated with baseline functional measures. There was a significant drop in activity in the post-operative period. Sudden immobility caused by complications was identified in real-time.

Conclusion: Compliance to the protocol ranged from 62-100%. All patients reported improved confidence and set higher exercise targets for themselves as a result of being monitored.

P104

A Novel Laparoscopic Assisted Approach to Left Sided Thoracoabdominal Oesophagectomy

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Background: The left thoracoabdominal approach for oesophagectomy allows excellent exposure for bulky tumours of the distal oesophagus and gastro-oesophageal junction. Due to the incision crossing the costochondral junction, patients can suffer from non-union or infection at that site. A novel laparoscopic approach has been developed to avoid these problems whilst retaining the advantages of the exposure. It also allows a single position of the patient for the duration of the operation. This study assessed whether it is as efficacious and safe as the open procedure.

Methods: A prospective database was kept of all left sided thoracoabdominal oesophagectomies performed between 2012 and 2015. A laparoscopic abdominal phase was started in 2013 by two of the three surgeons in the department. There was no patient selection. The laparoscopic assisted procedure also used the left lateral position with the table rotated away from the operator for the abdominal phase. For the thoracic phase, the patient was rotated back to lateral without the requirement of patient repositioning. A 6th intercostal space thoracotomy was utilised as there was no extension into the abdominal cavity. A paravertebral catheter was placed for post-operative pain relief, avoiding the use of an epidural.

Results: A total of 42 patients underwent either approach between the study dates. Twenty-one patients were found in each group with similar demographics. Mean incision to closure time was 192 minutes for the open group and 226 minutes for the laparoscopic assisted group (p=0.0049). There were fewer positive circumferential margins in the laparoscopic assisted group (7 vs. 10, P=0.0829) and an equivalent median number of lymph nodes examined (22 vs. 21, P=0.9181). Patients in the laparoscopic assisted group trended towards a shorter length of stay (11 vs. 13 days, P=0.7499) and quicker median time to oral intake (4 vs. 5 days, P=0.179o). There were fewer 30-day readmissions in the laparoscopic assisted group (1 vs. 3, P=0.1623), which were due to weight loss, poor oral intake, hyperkalaemia and an infected jejunostomy site respectively. They did not do significantly differently in any of the postoperative outcomes assessed, including the development of complications. There was one clinical anastomotic leak in the laparoscopic group, and one death due to PE. Wound infection rates were similar (2 vs. 1, P=0.3287), although in the open group the one infection was costochondral in nature.

Conclusion: In this study, the laparoscopic assisted approach is comparably safe and efficacious to the open version in terms of oncological outcomes, complications and recovery. Possible long-term advantages may be achieved regarding wound healing and infection due to the preservation of the costochondral margin, avoiding an uncommon but debilitating complication.

P105

A Comparison of Open and Hybrid Oesophagectomy in a Regional Upper Gastrointestinal Surgical Unit

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Introduction: Morbidity from oesophageal cancer resection remains high. At present there are three approaches to oesophagectomy: the traditional 2 stage ‘open’ procedure, the minimally invasive oesophagectomy (‘MIO’) and the ‘hybrid’ technique which combines a laparoscopic approach to the abdomen with an open thoracotomy. MIO is not suitable for all cases (particularly large, bulky tumours) and thus this series aimed to compare experience in ‘open’ and ‘hybrid’ techniques in a regional tertiary upper gastrointestinal surgical unit.

Methods: Patients undergoing oesophagectomy using either ‘open’ or ‘hybrid’ approaches between January 2005 and January 2015 in a single tertiary upper gastrointestinal surgical unit were included retrospectively. Patient and tumour demographics, length of stay, complications, mortality and oncological outcome were obtained from the hospital’s Cancer Tracker database. Data was analysed using SPSS v22.

Results: 106 patients were included (106 ‘open,’ 200 ‘hybrid’). Patient sex (47% vs. 79%, p<0.05), median age (66 vs. 64 years) and BMI (25 vs. 26) did not differ statistically (p>0.05) between ‘open’ and ‘hybrid’ groups respectively. Median operative time was greater in ‘hybrid’ procedures (349 minutes ‘open’ vs. 501 ‘hybrid,’ p<0.05). Tumour T and N stages in the resected specimens were equivocal, as was the rate of R0 resection (63% ‘open’ vs. 65% ‘hybrid,’ p=0.80). Median number of lymph nodes retrieved was greater from ‘hybrid’ procedures, however (24-0 vs. 29-5, p<0.05). Median length of stay was shorter in the ‘hybrid’ group (19 days ‘open’ vs. 16 days ‘hybrid,’ p=0.05), although there were no differences in mortality at 30 days (5.6% vs. 3.0%), 90 days (9.4% vs. 7.5%) and 1 year (33.1% vs. 30.0%, p>0.05).

Conclusions: ‘Hybrid’ oesophagectomy represents a viable and comparable alternative to conventional ‘open’ oesophageal resection. Although ‘hybrid’ procedures took longer to perform, a significant decrease in length of stay (3 days) was noted in this series. Average number of lymph nodes retrieved was also greater with the ‘hybrid’ approach, although there was no difference in mortality rates or survival up to the 1 year point.
Staging Laparoscopy for Gastric and Oesophageo-Gastric Cancer in Era of Advanced CT Imaging: Is it Still Required?
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Background: Oesophago-gastric cancer spreads locoregionally to lymph nodes but there is also the potential for transcocelial metastasis to the peritoneal cavity. Current guidelines recommend staging laparoscopy for gastro-oesophageal junction (GOJ) and gastric tumours prior to neoadjuvant therapy. The aims of this study were to investigate the value of laparoscopy in oesophago-gastric and gastric cancer staging in our unit and assess how findings alter subsequent management decisions.

Methods: All patients who underwent staging laparoscopy for GOJ (Siewert type II, III) or gastric cancer between June 2014 and December 2015 in the St Thomas’ Oesophago-Gastric-Centre were identified from a prospectively maintained database. Demographic details, preoperative staging, laparoscopy findings, cytology and histopathology results and multidisciplinary team decisions, in light of laparoscopy findings, were reviewed. It should be noted that GOJ cancer patients had also a PET/CT on their initial staging investigations.

Results: A total of 105 patients were identified: 66 patients (62.9%) had oesophago-gastric junction adenocarcinoma and 39 (37.1%) had gastric adenocarcinoma. Staging laparoscopy revealed peritoneal disease, below the resolution of CT imaging, in 1 of 66 (1.5%) patients with GOJ adenocarcinoma and 2 out of 39 (5.1%) patients with gastric adenocarcinoma. All 3 patients with peritoneal disease had long bulky tumours (>5cm), serosal involvement implied on imaging, and intra-abdominal lymph nodal enlargement. Furthermore, laparoscopy identified the locally advanced nature of disease (T4 tumours) in another 2 out of 66 (3%) GOJ cancer and in 2 of 39 (5.1%) gastric cancer patients, influencing final decision making towards non-operative treatment options. In summary, in 7 of 105 (6.7%) patients, the staging laparoscopy altered the final management. During the same time period 6 out of 162 patients (3.7%), which is the total number of patients underwent surgical exploration, were found to be inoperable at the time of resection due to findings of peritoneal disease. These included 2 patients with Siewert type I oesophageal adenocarcinoma (out of 51 with type I tumours, 3.9%), whom a staging laparoscopy had not been performed, while the other 4 patients had a clear staging laparoscopy before neoadjuvant chemotherapy, but all had bulky tumours with enlarged local lymph nodes on CT.

Conclusion: Staging laparoscopy is still justified in the staging of GOJ (type II and III) and gastric cancers where radiological investigations indicate radical treatment is feasible. Even for type I GOJ adenocarcinoma patients, with long, bulky tumours having features of abdominal lymph nodal involvement, a protocol for selective use of staging laparoscopy is being introduced in our Department. Finally, since as many resections for GOJ and gastric cancers are performed laparoscopically the use of laparoscopy post neoadjuvant chemotherapy becomes limited.

P107
Vascular endothelial growth factor (VEGF) splice isoforms may hold the key to targeting tumour angiogenesis in oesophageal cancer
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Background: Angiogenesis is principally induced by Vascular Endothelial Growth Factor A (VEGF-A); however, the use of VEGF-A inhibitors in the treatment of oesophageal cancer (e.g. Bevacizumab) has not proven efficacious in clinical trials. It has subsequently been shown that splicing of the terminal exon of VEGF-A pre-mRNA generates two separate isoforms; pro-angiogenic VEGF165a and anti-angiogenic VEGF165b. These isoforms are balanced to regulate angiogenesis by the splicing factor SRSF1, phosphorylated by serine–arginine protein kinase 1 (SRPK1). The aim of this study was to investigate expression of VEGF-A, its isoforms, and SRPK1 in oesophageal cancer and their association with micro vessel density (MVD) and patient survival. Understanding the role of SRPK1 and VEGF-A splice isoforms in the regulation of oesophageal cancer angiogenesis may provide a new and potentially efficacious target for anti-angiogenic therapy.

Methods: Tumour samples from 36 patients with oesophageal adenocarcinoma undergoing curative resection following neo-adjuvant chemotherapy were examined using immunohistochemistry for VEGF-A, VEGF165a, VEGF165b, CD31 (for MVD) and SRPK1. Digital droplet PCR was used to quantify SRPK1 levels at the gene level.

Results: VEGF-A was not associated with MVD. There was a high (pro-angiogenic) VEGF165a/VEGF165b ratio in the majority of the oesophageal cancers examined. VEGF165a expression was positively correlated with SRPK1 expression (p=0.01). There was a positive correlation between the pro-angiogenic (VEGF165a dominant) oesophageal cancers, MVD and poor overall survival; however, this did not reach statistical significance.

Conclusion: The dominance of the pro-angiogenic VEGF splice isoform and the splicing factor SRPK1 show greater correlation with oesophageal cancer angiogenesis and disease survival than the general target of VEGF-A. Further investigation of the control and potential inhibition of this angiogenic pathway in oesophageal cancer is required.

P108
High postoperative serum lactate levels are associated with early anastomotic leaks following oesophagectomy

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Background: Anastomatic leak (AL) following oesophagectomy is associated with long term mortality, disease recurrence, length of stay, and postoperative quality of life. We hypothesise that high serum lactate levels taken postoperatively are indicative of early gastric conduit necrosis, which eventually proceeds to frank anastomotic leak.

Methods: Consecutive patients who underwent subtotal oesophagectomy with formation of gastric conduit and oesophago-gastric anastomosis between Jan 2012 to Dec 2014 were included. Operations were performed and supervised by 5 consultant oesophagogastrectomy surgeons in a tertiary referral centre. Patient, disease and procedural demographics were extracted by retrospective review of casenotes. Anastomatic leak is defined as the presence of enteric content in the chest drain, presence of mucosal defect on direct visualisation at gastroscopy, or extravasation of oral contrast during fluoroscopic studies or CT. Parametric and non-parametric tests were performed.

Results: 147 patients were included in the study, of which 18 patients (12.2%) developed an anastomotic leak. Comparing patients with AL versus controls, no differences were seen in patient age, sex, ASA, BMI, smoker status, tumour pathology, location, and T- staging. Patients with AL were more likely to have pre-op chemo (P<0.0001), have longer unventilated ICU stay (MEDIAN 7 days versus 5 days, P<0.0001), longer total inpatient stays (median 38 versus 16 days, P<0.0001). The mean number of lymph nodes harvested. Day 0 (MEDIAN 2-56 versus 1-93, P=0.04), Day 1 (MEDIAN 2-23 versus 1-91, P=0.04), Day 2 (MEDIAN 1-46 versus 1-17, P=0.003), Day 3 (MEDIAN 1-06 versus 0-98, P=0.01) lactate were all significantly higher in patients with AL. Using a Day 2 lactate threshold of 1-7, the sensitivity and specificity of detecting anastomotic leak is 57% and 81% respectively analysing ROC curve. Using a Day 3 lactate threshold of 1-3, the sensitivity and specificity for detecting anastomotic leak is 50% and 84%.

Conclusion: A high postoperative serum lactate level on post-op Days 0–3 can be used to predict AL. Pre-op chemotherapy and lymph node positivity also predisposes to AL.
P109
Multicentre national observational cohort study on variation in peri-operative care pathways following major oesophago-gastric resection
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**Background:** Centralisation of oesophago-gastric (OG) cancer resections has led to substantial improvements in perioperative care with a reduction in post-operative mortality. However, morbidity rates remain high, with significant variation across UK centres in key outcomes. A multicentre prospective observational cohort study was performed to evaluate current practice and variation in peri-operative pathways of care.

**Methods:** 11 UK centres prospectively recorded patient demographics, operative details and peri-operative management for consecutive patients during a 3-month period.

**Results:** 190 patients were included in the study, 120 undergoing oesophagectomy and 70 gastrectomy. 11 of 12 centres performed more oesophagectomies than gastrectomies with a median of 15 OG resections per centre (range 7–31). Significant variation in surgical approach was seen with 0 to 53% undertaken in part laparoscopically (p<0.005). For oesophagectomies the commonest ventilation technique during the thoracic phase was one lung (n = 102, 85%), however one centre delivered two lung ventilation in n = 8 (53%). Post-operative destination following oesophagectomy was ITU in n = 84, (70%, variation between centres 89-100%). An NG tube was placed following oesophagectomy in 96% (variation between centres 89-100%). The median intubation time for oesophagectomy was 7–3 hours (variation between centres 5–24) and median ITU stay 4 days (variation between centres 0–9). For all OG resections chest physiotherapy was documented in n = 150 (79%, variation between centres 46-100%). The proportion of patients with a grade 3 or > Clavien-Dindo complication varied between 0-50% at different centres (p = 0.06). Median overall length of stay post gastrectomy was 9 days (variation between centres 8–13) and post oesophagectomy was 14 days (variation between centres 7–54).

**Conclusion:** Whilst outcomes following oesophago-gastric resection have improved in recent years this study has confirmed substantial variation in peri-operative care pathways. A national focus on standardisation of peri-operative care pathways and refinement of multidisciplinary care, with sharing of best practice, may further improve morbidity and mortality rates.

P110
High postoperative chest drain volumes are associated with chyle leaks following oesophagectomy
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**Background:** Chyle leak (CL) following oesophagectomy is associated with respiratory complications, increased hospital length of stay, long term quality of life and mortality due to disease recurrence. We hypothesise that high chest levels taken postoperatively are can be used to predict early chyle leak.

**Methods:** Consecutive patients who underwent subtotal oesophagectomy with formation of gastric conduit and oesophago-gastric anastomosis between Jan 2012 to Dec 2014 were included. Operations were performed and supervised by 5 consultant oesophagogastric surgeons in a tertiary referral centre. Patient, disease and procedural demographics were extracted by retrospective review of casenotes. Chyle leak is defined as the presence of milky fluid in the chest drain, indicative of emulsified fat.

**Results:** 147 patients were included in the study, of which 11 patients (7.5%) developed chyle leak. Comparing patients with CL versus controls, no differences were seen in patient age, sex, ASA, smoker status, use of neoadjuvant chemotherapy, tumour location, T-staging, number of harvested nodes. Patients with CL were more likely to have lower BMI (MEDIAN 24.1 versus 27.2, P = 0.04), squamous cell carcinoma (P = 0.006), higher number of positive lymph nodes (MEDIAN 4-9 versus 2-3, P = 0.03). The number of unventilated ICU stays is higher (MEDIAN 6-5 days versus 5-0, P = 0.04), but total number of inpatient days was not significant. Median Day 0 to day 10 total chest drain volumes were significantly higher in patients with CL compared to controls; Day 0 (700mls versus 500mls, P = 0.02), Day 1 (1113mls versus 500mls, P = <0.0001), Day 2 (150mls versus 350mls, P=0-0001), Day 3 (81mls versus 225mls, P=0-0001), Day 4 (703mls versus 175mls, P=0-0001), Day 5 (438mls versus 100mls, P<0-0001), Day 6 (308mls versus 75mls, P=0-0001), Day 7 (225mls versus 50mls, P=0-0001), Day 8 (225mls versus 25mls, P=0-0001), Day 9 (250mls versus 50mls, P=0-0001), Day 10 (400mls versus 25mls, P=0-0001).

**Conclusion:** High chest drain volumes could be used to predict CL. Squamous cell carcinoma and lymph node positivity are also predictive factors for CL. High risk patients could be selected for methylene blue or lipid challenge via feeding jejunostomy.

P111
Tumour- stroma ratio does not predict survival in patients undergoing neo-adjuvant chemotherapy and resection for oesophageal adenocarcinoma
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**Background:** The ratio of tumour to stromal cells at the leading edge of resected tumours has been shown to be predictive of survival in oesophageal and colorectal cancer. These studies did not include patients undergoing neo-adjuvant chemotherapy (NAC). As NAC is the current standard of treatment in oesophageal adenocarcinoma, we wished to apply it to this patient group.

**Methods:** A prospective database identified patients undergoing NAC and resection and the leading edge of tumour was identified on H&E slides, ensuring necrotic or mucinous tissues were not included. The percentage of visible field comprising stroma was calculated and a cut off value of 50% was adopted.

**Results:** One hundred and four patients were included in the cohort. Most were under 75 (80%) years of age and the majority were male (86%). T3 disease was present in 58% and node positivity was seen in 60%. The average follow up was 46 months and 52% of patients died in the follow up period. Median survival in the low tumour stroma percentage group was 31 months (95% CI 19–28 months), compared with 15 months (95% CI 15–54 months) in the high percentage group. This was not statistically significant (p = 0.826).

**Conclusion:** We have not demonstrated a significant association between tumour stroma percentage and survival, but this does not suggest that interaction between tumour cells and their associated stroma is not important in oesophageal adenocarcinoma. We suggest that the relationship is compounded by the effects of neo-adjuvant chemotherapy, which may disrupt the tumour microenvironment.

P112
Risk Factors for Anastomotic Stricture Post Oesophagectomy with a Standardised Sutured Anastomosis
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**Background:** Benign anastomotic strictures occur frequently after oesophagectomy, and impact on postoperative recovery, nutritional status and quality of life. This large cohort study explored the incidence of stricture after transthoracic (2- and 3-stage) and transhiatal resections with uniform single layer sutured anastomotic technique, and aimed to identify independent risk factors.
Methods: Patients undergoing oesophagectomy with gastric conduit reconstruction between February 2001 and October 2014 were studied prospectively. Symptomatic anastomotic stenosis was defined as dysphagia requiring endoscopic dilatation, and refractory strictures as those requiring >5 dilatations. Multivariable logistic regression was performed to determine factors independently associated with stricture development.

Results: 524 patients underwent oesophagectomy (2-stage, n=328 [62-6%]; 3-stage, n=129 [23-3%]; transhiatal, n=74 [14-1%]) with an in-hospital mortality rate of 2-7%. The predominant histologic type was ADC (n=404 [77-1%]; SCC, n=120 [22-9%]) and 58-5% of patients required neoadjuvant therapy (chemotherapy only, n=119 [22.7%]); chemoradiation, n=188 [35.9%]). Strictures occurred in 125 patients (24-5%), were refractory in 50 (9-7%) and required a median of 2 dilatations (range 1–18). On multivariate analysis, ASA grade (P=0-05), operation type (P<0-001) and significant postoperative cardiovascular event (P=0-05) were independently associated with increased stricture and refractory stricture risk, while histologic type (P=0-25), smoking (P=0-91) and intraoperative blood loss (P=0-82) were not. Both transhiatal (P<0-001) and 3-stage resection (P=0.002) increased increased stricture risk versus 2-stage resection, with increased refractory stricture risk after transhiatal only (P<0-0001). Transhiatal resection (P<0-001) and anastomotic leak (P=0-01) were independent predictors of refractory strictures requiring >5 dilatations

Conclusion: Benign anastomotic strictures are common, particularly with cervical reconstruction, and after transhiatal resection. Refractory strictures are rare. Where fitness and oncologic equivalence apply, a thoracic anastomosis provides significant advantages compared with a cervical anastomosis in terms of anastomotic stricture risk.

P113

Impact of endoscopic ablative therapy on oesophagectomy rates for Barrett's High grade Dysplasia

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Background: Endoscopic therapy with RFA and EMR is now an accepted alternative to surgery for Barretts HGD and intramuscular adenocarcinoma (IMC). The effects of such therapy on oesophagectomy rates in the UK have not been documented however. This study aims to assess the impact of an EMR/RFA program on oesophagectomy rates for Barretts HGD in a tertiary referral teaching hospital.

Methods: Our unit introduced EMR/RFA for appropriate patients with Barretts HGD and/or IMC in 2008. We assessed the impact of this therapy on oesophagectomy rates for these cases for a pre RFA (2001–2008) vs post RFA (2009–2016) periods. Patient demographics, tumour type and final pathological stage were recorded and analysed. Patients with complete pathological response were omitted from T stage analysis.

Results: 330 oesophagectomies were performed during the period, 256 Male (77-6%) vs 74 Female (22-4%) with a median age of 63 (range 27–82), 102 procedures were performed prior to 2009, with 228 after. 279 procedure were for adenocarcinoma (84-5%), with 48 for SCC (14-5%). There was no difference in age, sex or tumour type between cohorts (p=0.164; p=0.50; p=0.215). Pathological T stages was as follows: pT1: 73 (22-1%); pT2: 51 (15-5%); pT3:156 (47.3%); pT4: 13 (3-9%) with no difference between cohorts (p=0.168). Pre-2009 9 patients (8-8%) underwent oesophagectomy for HGD vs 3 post-2009 (1-3%) (p=0.002). Of these 3 patients, 2 were refractory to RFA (1 with significant stricture preventing further treatments) and 1 was performed outwith the oesophagoastragastic service.

Conclusion: The introduction of EMR/RFA has resulted in a significant reduction in the number of oesophagectomies being performed for high grade dysplasia. Patients undergoing resectional surgery for HGD and IMC are limited to those with refractory disease.
**P116**

**The Management of and Outcome from Oesophageal Perforation in a Tertiary Referral Centre**

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**Introduction:** Oesophageal perforation remains a significant cause of morbidity and mortality. Optimal management remains a subject of debate but broadly comprises of conservative, endoscopic or surgical approaches. This study aimed to delineate the management and outcome from oesophageal perforation at a regional tertiary upper gastrointestinal surgical unit.

**Methods:** All patients presenting transferred with oesophageal perforation to a single regional tertiary upper gastrointestinal surgical unit between September 2003 and March 2016 were identified retrospectively. Patient demographics and clinical data were obtained from the hospital’s online Clinical Portal system. The Pittsburgh Oesophageal Perforation Severity Scoring System (PSS) was utilised to stratify the magnitude of perforation and subsequent systemic response upon presentation and also to attempt to correlate this with management and outcome. Data was analysed using SPSS v22.

**Results:** 74 patients (41 male) with oesophageal perforation were identified. The median age was 64-0 (range 17–88) years. The most common aetiology was iatrogenic (55.4%) followed by Boerhaave’s (23.0%). Less frequent causes included trauma and tumour perforation (5-4% each). 41 patients were treated conservatively, 27 surgically and 7 underwent endoscopic placement of an oesophageal stent. The overall mortality rate was 12.2% (9/74). Mortality did not differ between operative and non-operative groups (p = 0.33). Median length of hospital stay for those that survived was 27.5 (1–125) days. Median PSS was 5 (range 0–10) on presentation. There was a trend for median PSS to be higher in patients treated operatively (6 vs. 4, p = 0.07), but PSS on presentation was not related to survival nor correlated to length of stay in this series.

**Conclusions:** Oesophageal perforation managed in a specialist unit has an acceptable mortality rate (12.2%). Although a number of patients can be successfully managed conservatively, surgery is still required in a significant proportion of cases. The development of validated scoring systems to aid clinical and radiological assessment in the guidance of management would be beneficial and certainly warrant further investigation in this clinically important condition.

**P117**

**The GASTROS Study: Standardising Outcome Reporting in Gastric Cancer Surgery Research**

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**Aims:** Partial or total gastrectomy is the mainstay of treatment with curative intent for gastric cancer. Surgery, however, is associated with complications and a significant impact on quality of life. Identifying the best surgical approaches for gastric cancer includes comparing and synthesizing data from surgical studies in systematic reviews and meta-analyses. This is presently difficult as there is great heterogeneity in the reporting of outcomes in surgical trials. Many trials do not report ‘quality of life’ or ‘patient-reported outcomes’.

GASTROS (Gastric cancer Surgery Trials Reported Outcome Standardisation) is an international study which aims to develop a core outcome set (COS) – a minimum standardized group of outcomes – which should be reported by all future gastric cancer surgery trials to enable more accurate comparison of different surgical approaches. GASTROS is fully funded by the National Institute for Health Research and supported by the Medical Research Council’s Hubs for Trials Methodology Research. Here we present our study protocol.

**Methods:** The GASTROS study has 3 stages. Stage 1 involves undertaking a systematic review of RCTs to identify a ‘long-list’ of possible outcomes to include in the COS. Qualitative interviews with gastric cancer patients will be undertaken to identify any further outcomes which patients deem important. Stage 2 involves 3 rounds of a Delphi survey of key stakeholders (surgeons, cancer nurse specialists and patients) to determine which outcomes to include in the COS. Stage 3 will focus on identifying the most appropriate methods of measuring these outcomes.

**Anticipated Benefits:** This study will enable more reliable and accurate comparison of surgical interventions for gastric cancer. It will inform the design of future gastric cancer surgical trials, clinical practice and surgical audits by developing a standardised, well-defined group of outcomes which are important and relevant to both patients and clinicians.

**P118**

**Patient Factors Predicting Long Term Outcome from Gastric Pacemakers**

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**Background:** Gastroparesis is a debilitating and complex medical condition characterised by vomiting and abdominal pain. It can be refractory to medical therapy, and sufferers often require supplemental nutrition. Gastric pacemakers have been used to stimulate gastric emptying and decrease the effects of this disease. We sought to determine if there were any factors in our cohort of patients which may predict long term outcome. This would enable us to improve patient selection in the future to ensure this limited resource is directed towards the population of patients who will benefit most from it.

**Methods:** A retrospective audit of clinical letters was carried out for all patients who had undergone gastric pacemaker implantation. Each patient had letters selected at set dates post-operatively; six weeks, six months, one year then annually thereafter. Their response was graded as good, some or poor. We noted those who had the device removed.

**Results:** A total of 53 patients underwent gastric pacemaker implantation between 2009 and 2016 at two sites in the same city, under two separate Consultants. Female patients made up 39 of these (74%) and males 14 (26%). Ages ranged from 16–58 years (Mean age = 34.6 years). Twenty of the patients were diabetic (38%) and 33 had idiopathic (62%). Thirty patients used opiate medication at some point during their follow up (57%) and 23 did not (43%). Mean follow up was 30.8 months (Range = 0–72 months).

Diabetic patients had fewer devices removed than idiopathic patients (5 vs. 15%), fewer poor responses (0 vs. 24%) and more good outcomes (40% vs. 18%). Non-opioid users had fewer devices removed (9% vs. 13%), fewer poor responses (0% vs. 27%) and more good outcomes (35% vs. 20%).

**Conclusion:** Ideally these devices should be implanted in patients who have diabetic gastroparesis and are not yet on opiate medication. This should improve positive outcome and decrease the likelihood of device removal.

**P119**

**Surgical approach in relation to survival for oesophageal cancer – A comparison of the left thoraco-abdominal and Ivor-Lewis oesophagectomy**

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**Introduction:** No study to date has compared the Ivor Lewis (ILO) and left thoraco-abdominal (LTO) oesophagectomy. Both techniques have theoretical advantages in terms of operative exposure.

**Methods:** A multi-center collaboration database was utilised, incorporating 5 units known to perform both ILO and LTO. The study exposure was operative approach (ILO or LTO). The primary outcome measure was time to death. Secondary outcome measures included time to tumor recurrence, positive surgical resection margins, lymph node yield, post-operative death and hospital length of stay. Multivariable analysis utilised a Cox proportional hazards model adjusting for age, pathological tumor stage, tumor grade, lymphovascular invasion and neo-adjuvant treatment.

**Results:** 1528 patients were included in the study database (770 ILO; 758 LTO). Of these, 1287 (84%) had adenocarcinoma (AC) and were analyzed separately from squamous cell carcinoma (SCC) patients. On adjusted analysis, comparing ILO and LTO for AC patients, no difference was seen in terms of time to death (HR 0.947 95% CI 0.808-1.111) or time to recurrence (HR 0.866 95% CI 0.708-1.072). The risk of a positive resection margin was also similar between ILO and LTO (OR 0.841 95% CI 0.600-1.179). Median lymph node yield did not differ between approaches (LTO 21; ILO 20; p = 0.372). Overall in hospital mortality was 2.3%, significantly lower in the LTO group (LTO 1.2%; ILO 3.4%; p = 0.004). Median hospital stay was 11 days in the LTO group and 14 days in the ILO group [p=0.0001]. The results for SCC mirrored those for AC.

**Conclusions:** This study revealed no difference between ILO and LTO in terms of time to death, time to recurrence or surgical resection margin involved. In-hospital mortality and post-operative length of stay favoured LTO.

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**Baseline nutritional status of patients with oesophagogastric cancer planned for curative treatment**

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**Background:** Nutritional difficulties are common in patients who present with oesophagogastric cancer. However, nutritional assessment is often limited to changes in weight and body mass index (BMI). The aim of this study was to comprehensively describe the nutritional status of a cohort of newly diagnosed patients with OG cancer, planned for curative treatment.

**Methods:** Data on weight, height, BMI, weight changes, haemoglobin, iron status, Vitamin B12, folate, Vitamin D and Zinc was collected prospectively. Incidence of deficiencies were examined according to a dichotomous classification of weight loss (weight stable/5% weight loss and >5% weight loss).

**Results:** Forty two patients were included, 6 women and 36 men. The mean age was 67 years. Eleven patients were planned for primary surgery, 27 for neoadjuvant chemotherapy and 4 for primary chemotherapy. The mean BMI was 27.5kg/m²; 1 (2%) patient had a BMI <19 kg/m²; 12 patients (29%) had a BMI within normal range; 17 patients (40%) were overweight; and 12 patients (29%) were obese.

The mean (min-max) weight loss was 4% (0-22%). Twenty five percent of patients were weight stable/gained weight prior to diagnosis; 17% lost 0-1-4 9%, 12% lost 5-9.9% and 19% lost ≥10%. Ten patients were anaemic (70% of these were weight stable/5% weight loss; 30% had lost > 5% weight). Eleven patients were iron deficient (55% of these were weight stable/5% weight loss; 45% had lost >5% weight). Five patients were folate deficient (80% of these in the weight stable/5% weight loss; 20% had lost >5% weight). Eighteen patients were Vitamin D deficient/insufficient (55% of these were weight stable/5% weight loss; 45% had lost >5% weight). Fifteen patients were Zinc deficient (60% of these were weight stable/5% weight loss; 40% had lost >5%).

**Conclusion:** The incidence of anaemia and nutritional deficiencies was high, particularly for iron, Vitamin D and Zinc. This was irrespective of weight loss. Therefore consideration of deficiencies should be given in patients who might not otherwise be considered at nutritional risk.

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**Electronic patient self-reporting of adverse events (eRAPID): towards the safer monitoring of patients after upper gastrointestinal surgery for cancer**

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**Background:** Upper gastro-intestinal surgery for cancer can have acute and long-term adverse effects, many of which occur after discharge from hospital. Improving the monitoring of problems after hospital discharge may allow the earlier detection of adverse events (AEs) and improve patient care. Electronic data capture may offer a feasible, cost-effective and sustainable solution for patient-reporting of AEs after hospital discharge. This feasibility study will examine the usability of the eRAPID (Electronic patient self-Recording of Adverse events: Patient Information and a Device) intervention to enable online patient-reporting of AEs after upper gastrointestinal (UGI) surgery for cancer.

**Methods:** The eRAPID online questionnaire has been developed from validated patient-reported outcome (PRO) measures (European Organisation for Research and Treatment of Cancer questionnaires) and in close consultation with clinicians and patients. Patients who have undergone surgery for cancer at University Hospitals Bristol NHS Foundation Trust will complete the online eRAPID questionnaire (comprising questions about complications, symptoms, functioning and quality of life) at discharge and at regular intervals for up to 8 weeks post-discharge. Post-discharge consultations between patients and professionals (surgeons, consultants, clinical nurse specialists) involved with their care will be audio-recorded. Patients and professionals will be interviewed about their experiences of using the eRAPID intervention.

**Results:** Data will be used to: (i) test the eRAPID system’s coherence and functionality; (ii) explore the acceptability and utility of eRAPID from patients’ and health professionals’ perspective; (iii) explore the quality and usefulness of eRAPID as a method for monitoring PRO assessment to improve patient care, and; (iv) develop thresholds for PROs in order to generate reports/alerts to notify professionals of AEs and serious adverse events (SAEs) that require intervention.

**Conclusion:** The eRAPID intervention aims to improve and streamline patient care by facilitating the detection and reporting of PROs and AEs following UGI surgery for cancer. This feasibility work will optimise the eRAPID intervention ready for full-scale evaluation in a randomised controlled trial.

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**Current Opinion on Management of Achalasia by Oesophago-gastric Surgeons in the UK**

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**Background:** Treatment options for achalasia include pharmacological, Endoscopic Botulinum Injection (EBTI), Pneumatic Dilatation (PD) and Laparoscopic Heller’s Myotomy. More recent advances include Peroral Endoscopic Myotomy (POEM) and laparoendoscopic single-site and robotic surgery. Current consensus in management of achalasia in the UK is not known. This study aimed to determine current practice and opinions of Achalasia management amongst Oesophago-gastric surgeons in the UK.

**Methods:** A 28 question online survey was distributed to members of the Association of Upper Gastro-Intestinal Surgeons in the UK.

**Results:** Of the 111 responses, 87 (81%) ranked Heller’s Myotomy as the treatment of choice for achalasia with 64 (64%) selecting Balloon Dilatation as the second choice option. There was no consensus on whether the type of achalasia would affect management decisions, with 44% considering type of achalasia as a factor.
The majority of surgeons perform Heller’s myotomy laparoscopically, however a small minority of surgeons still prefer the open approach. If a hiatus hernia was detected 78% of surgeons would repair this at time of Heller’s myotomy. 82% routinely and 11% selectively would also incorporate a fundoplication procedure. The consensus was that not performing a fundoplication posed a significant risk of post-operative gastro-oesophageal reflux. Of those surgeons who would perform a fundoplication, 84% would prefer an anterior fundoplication, 9% would perform a posterior repair and 4% would perform a Nissen fundoplication. Only 13 of the 111 respondents reported to have access to POEMS and 8 would use it. However in the cohort of surgeons who do not have access to POEMS, 43% selected said that it would be something they would be interested in, however were unsure whether it was a good alternative to Heller’s myotomy.

**Conclusion:** Heller’s myotomy is the preferred treatment of choice at present, however POEMS is currently only available in three centres in the UK. There is a lack of experience and consensus as to whether this is a good alternative to Heller’s myotomy.

### P124

**Is barium swallow a useful test as first line investigation for dysphagia?**

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**Introduction:** Patients with dysphagia are referred to the General Surgical or ENT department in our institution by our local General Practitioners (GP). Most of the patients from ENT department were investigated with a barium swallow as a primary investigation following a nasopharyngoscopy. However, the surgical team preferred an OGD, and in selective patients a subsequent barium swallow was organised. Hereby a retrospective study was conducted to assess the utility of BS in these patients.

**Methods:** 85 consecutive patients undergoing BS in 2014–15 for dysphagia as their main presenting symptom were identified. Their clinical, endoscopic and radiology database were analysed to investigate the outcome following this episode.

**Results:** A total of 51 (60%) patients underwent BS as first primary investigation after a nasopharyngoscopy. 3 (6%) of them had clinically important findings. This included 1 oesophageal cancer, 1 oesophageal web and 1 pharyngeal pouch. The remaining 34 (40%) patients underwent an OGD followed by BS. Barium test revealed important diagnosis in 11 (33%) of them. This included 1 oesophageal web, 2 achalasia, 2 dysmotility, 1 pharyngeal pouch, 1 paraoesophageal hernia, 1 tortuous oesophagus and 1 benign stricture. 5 of these 11 patients had positive findings on prior OGD. In addition 2 patients in each group were found to have a small hiatus hernia.

**Conclusion:** BS following an OGD had higher diagnostic value and helped in further management of these patients. Barium as first line test may delay the diagnosis and management of patients with significant clinical problem.

### P125

**Does age and neoadjuvant therapy affect survival in oesophagectomy with lymphadenectomy?**

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**Background:** To determine the predictors of survival after curative oesophageal cancer resection. Most studies of neoadjuvant therapy occurred in patients prior to the standardisation of surgical technique and the value of chemotherapy in a lymphadenectomy group is not well established.

**Methods:** A prospectively populated database was retrospectively analysed for a single surgeon consecutive cohort of two field lymphadenectomy with open Ivor Lewis oesophagectomy. Practice changed during the period with the advent of neoadjuvant therapy and PET scan becoming the standard of care. Lymphadenectomy was unchanged. Tumour data and mortality was analysed by Cox regression and Kaplan Meier survival.

**Results:** Data was available for 140 patients of which 240 were males. Median age was 67 years (range 18–98). Histology confirmed adenocarcinoma in 64% and squamous cell carcinoma in 26%. Staging was Tis in 7.4%, 1a in 9.1%, 1b in 10.3%, 2a in 3.5%, 2b in 24.7%, 3a in 14.7%, 3b in 10.9%, 3c in 13.8%, and T4 2.9%. Neoadjuvant therapy was utilised in 95 patients (27.9%). Overall 5 year survival was 43% and 30 day mortality was 3.2%. Tumour stage was predictive of survival (p<0.001). There was no survival difference between GOJ and oesophageal tumours. In patients aged over 75 years, median survival was 22 months whilst under 75 years this was 39 months (p=0.001). There was no difference between the early and late series. Multivariate analysis showed significant survival benefit with nodal count > 30 (p=0.018). Survival in the neoadjuvant/surgery group was not different to the surgical group (median 31 months).

**Conclusion:** Age over 75 predicts a worse outcome. Neoadjuvant therapy with surgical lymphadenectomy may not affect survival.

### P126

**Oesophageal stent insertion pre-operatively before oesophagectomy as a negative prognostic indicator**

Gregory Simpson, James Evans, David Monk

**Countess of Chester Hospital, Chester, UK**

**Background:** The pre-operative course of patients diagnosed with oesophageal cancer is often complicated by the development of dysphagia. This can necessitate the insertion of an oesophageal stent in the pre-operative phase. We aim to assess the oncological outcome of those patients who have received a stent followed by oesophagectomy compared with those who did not require stent prior to surgical resection.

**Methods:** A retrospective review of a prospectively maintained database of all patients undergoing oesophagectomy for cancer in a single centre was performed. Patients who underwent oesophagectomy for oesophageal cancer during a 5 year period between 2011 and 2015 were included. Demographic, surgical, endoscopic and histological data was collated and analysed.

**Results:** 120 patients underwent oesophagectomy for oesophageal cancer. Of these 7 patients were deemed to have unresectable disease (5-8%). Mean age was 66±3 years. Total number of pre-operative stents placed was 12 (10%). Positive resection-margins were encountered in 41.7% of stent patients compared with 19.4% of those who did not receive a stent. Unresectable disease was seen in 16.7% of stent patients compared with 4.6% of patients not requiring a stent. 100% of patients who received a stent had T3 disease whilst 50-5% of patients without a stent had T3 disease. 40% of patients who underwent stent insertion had N3 disease with 8-7% of non-stent patients having N3 disease.

**Conclusion:** Patients who receive an oesophageal stent pre-operatively have a higher rate of unresectable disease, incomplete resection and have more advanced disease with regards T and N stage. The requirement for an oesophageal stent pre-operatively can be considered a negative prognostic indicator with respect to staging and may indicate more rapidly progressive disease.

### P127

**The "Audit of all Audits"**

Eleanor Massie, Andrew Cockbain

**St James University Hospital, Leeds, UK**

**Background:** Clinical audit is an important tool for ensuring practice meets expected standards, identifying areas for improvement, and documenting improvements in care. We were concerned that the introduction of quarterly mandatory audits diminished the process to a tickbox exercise and devalued the role of audit. We therefore reviewed all mandatory audits in UGI surgery in our Trust over the last five years to evaluate their impact.
Methods: Mandatory audits in our Trust include venous thromboembolism (VTE) prophylaxis, nasogastric (NG) tube placement, consent for surgery, antimicrobial prescription, medical notekeeping and death certification. All audits are recorded on an electronic registry, with a key findings proforma and a copy of the departmental presentation. All mandatory audits between 2010–2015 in UGI surgery were retrieved. Sequential audits in each category were compared to evaluate whether recommendations had been implemented and whether audit standards were improving over time.

Results: Only VTE and NG tube audits were undertaken in a standardised and comparable manner. The remaining audits focused on different outcomes each time they were performed, making the results incomparable. Many audits performed were not presented at departmental meetings. Comparing consecutive audits across 5 years, recommendations were implemented in 100% of NG, 75% of VTE, 25% of consent and 0% of antimicrobial audits. Insufficient data was available to make any comparison of medical notekeeping and death certification audits.

Conclusion: Inconsistent reporting in audits invalidates the effectiveness of the audit process. We hypothesis that “audit fatigue” has led to disengagement with routine mandatory audits amongst both senior and junior clinicians. Many audits are either not being performed, not being presented, or recommendations not being implemented. Meaningful audits are an important learning exercise for junior staff, but this training opportunity risks being lost.

P128

Is there a role for routine post neo-adjuvant chemotherapy CPEX fitness testing in patients undergoing oesophagogastric cancer surgery?  
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Background: We have previously demonstrated a correlation between anaerobic threshold (AT) during cardiopulmonary exercise testing (CPEX) and the development of cardiopulmonary complications in high risk patients undergoing oesophagogastric (OG) cancer surgery. This study aims to assess the value of routine re-testing following neo-adjuvant chemotherapy (NAC).

Methods: Patients undergoing NAC with subsequent OG surgery with pre- and post-NAC CPEX data were identified from a prospectively maintained database. Measured CPEX variables included AT and maximum oxygen uptake at peak exercise (VO2 peak). Values within 1ml/kg/min were considered static. Patients were grouped based on our previous AT ranges of <9ml/kg/min, 9.1-11ml/kg/min and >11ml/kg/min. Outcome measures were unplanned ITU stay, post-operative CV morbidity and mortality.

Results: 37 patients were identified with a mean age 64 years (range 49–77 years). Mean pre-NAC AT was 11.14 (SD 3.33ml/kg/min, range 4.6-19.3) while post-NAC AT was 10.88 (SD 2.98ml/kg/min, range 5.2-18.1). Mean decrease 0.25ml/kg/min (p = 0.562). Outcomes were as follows: Unplanned ITU Stay-11(35.1%), CV complications-18(48.6%), Mortality-1(2.7%). Patients with CV complications had lower mean pre and post AT (10.95 and 10.71) vs those with none (11.32 and 11.04). 14(37.8%) of patients experienced a decline in AT following chemotherapy, while 23(62.2%) demonstrated static or increased AT. There was no correlation between change in AT (increased vs decreased vs static) and incidence of CV complication or ITU stay. Pre-NAC AT <9ml/kg/min showed no significant increase in CV complications (50% vs 48%, p = 0.621). Post-NAC AT <9ml/kg/min demonstrated a trend towards increased CV complications (70.0% vs 40.7%, p = 0.113). Patients dropping into a lower AT category were more likely to develop a CV complication than those with improved AT (62.5% vs 28.6%, p = 0.225).

Conclusion: The change in AT pre- and post-NAC does not appear to directly influence outcomes. Post NAC AT <9ml/kg/min demonstrated a higher risk for CV complications as did those falling into a lower AT category post-NAC, although greater numbers are required to demonstrate this statistically.

P129

Use of Tumour Markers in Oesophago-Gastric Cancers: Surgeon Perceptions and Cost-Benefit Trade-off Analysis

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Background: Oesophago-gastric cancers represent relatively uncommon malignancies. Tumour markers are often used by surgeons, there remains no consensus as to the true value of these markers in the diagnostic pathway of upper gastro-intestinal cancers. This study aimed to evaluate the utility of three common tumour markers in oesophago-gastric cancers.

Methods: A systematic review of the literature was undertaken to elicit the sensitivity, specificity, statistical heterogeneity and ability to predict recurrence and metastases for Cancer Embryonic Antigen (CEA), Cancer Antigen 19-9 (CA19-9) and Cancer Antigen 125 (CA125). European surgeons were surveyed to assess their current practice and the characteristics of tumour markers they most valued. Data from the included studies and survey were combined in a cost-benefit trade-off analysis to assess which tumour markers are of most use in clinical practice.

Results: Diagnostic sensitivity and specificity were ranked the most desirable characteristic of a tumour marker by those surveyed. One hundred and twelve studies were included. The cost-benefit trade-off showed that CEA outperformed both Ca19-9 and Ca125 with lower financial cost and a higher sensitivity, diagnostic accuracy for metastases at presentation (area under the curve (AUC) 0.70 v 0.61 v 0.46) and similar diagnostic accuracy for recurrence (AUC 0.46 v 0.48).

Conclusion: Cost-benefit trade-off analysis identified CEA to be the best performing tumour marker, however all three markers performed poorly and should preclude their widespread use in clinical practice. Further studies should seek to evaluate new tumour markers, with investigation tailored to factors that meet the requirements of practicing clinicians.

P130

Management of oesophagectomy leaks using the Thopaz digital chest drainage system

Sam Mehta  
Leeds Teaching Hospitals NHS Trust, Leeds, UK

Background: Leakage from either the anastomosis or gastric tube remains one of the main causes of postoperative morbidity and mortality following oesophagectomy. Assuming that the conduit is reasonably well perfused, one of the main causes of postoperative morbidity and mortality following oesophagectomy. Assuming that the conduit is reasonably well perfused, the mainstay of management is usually conservative. The Thopaz digital drainage system provides regulated negative pressure and is optimised for pleural drainage. This is the first description of its use in the management of post-oesophagectomy leaks.

Methods: We describe 2 patients who developed free pleural leaks following oesophagectomy.

Results: In the first patient the site of the leak was a large defect at the anastomosis. There was free leakage into the postero-lateral pleural space. Despite an initial attempt at conservative management with an underwater seal drain, sepsis was poorly controlled. There was minimal change in the size of the pleural leak after 8 weeks. The drain was then attached to a Thopaz unit at a negative pressure of 20cmH2O. Drainage output increased but there was an immediate resolution of sepsis with the patient feeling significantly better. The pleural space gradually closed within 6 to 8 weeks with complete resolution of the leak.

In the second patient there was a free pleural leak from the apex of the gastric tube. The chest drain was appropriately positioned but again sepsis was poorly controlled. At 3 weeks the drain was attached to the Thopaz unit at a negative pressure of 20cmH2O. There was immediate improvement in the patient’s inflammatory markers. The drain fell out by accident at 4 weeks but by this point the pleural cavity had closed with the leak now contained and the patient able to go home on oral intake.
Conclusion: The Thopaz digital drainage system has a number of advantages compared to conventional underwater seal drainage. Its portability enables patient mobilisation as well as providing objective monitoring of air and fluid output. Portable suction efficiently evacuates contents within the leak cavity thus enabling rapid re-expansion of the lungs and resolution of the leak.

P131

The impact of pre- and post-operative weight loss and body mass index (BMI) on prognosis in oesophageal cancer

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Background: Increased BMI is a strong risk factor for oesophageal adenocarcinoma. Weight loss is a cardinal symptom of the disease, and is a typical side effect of surgery. The aim of this study was to assess the impact of pre- and post-operative weight loss and BMI on long-term survival after resection for oesophageal cancer.

Methods: This prospective cohort study included 616 patients operated on for oesophageal cancer in Sweden in 2001–2003 with follow up until 2016. Multivariable Cox proportional hazard models provided hazard ratio (HR) and 95% confidence interval (CI) of mortality while adjusting for known prognostic factors, including tumour stage. The present study included 390 patients who responded to a questionnaire on weight history, 6 months after surgery.

Results: Pre-surgery weight loss indicated increased HRs of mortality, but these were not statistically significant overall. Post-surgery weight loss correlated to weight stable patients, patients with >20% weight loss post-surgery had a worse overall all-cause mortality (HR 1.77, 95% CI, 1.05-2.99) and disease-specific mortality (HR 2.13, 95% CI, 1.21-3.75). There were statistically significant trends towards increased mortality in patients with weight loss, particularly regarding disease-specific mortality. There was no increased risk of mortality in patients who were underweight, overweight or obese pre-surgery compared to patients within a normal BMI range. However, a statistically non-significantly decreased HR for the BMI ≥ 30kg/m2 category (overall all cause mortality HR 0.83 95% CI, 0.53-1.30) may suggest a survival benefit in obese patients. Patients with a BMI < 19.9kg/m2 at 6 months post-surgery had worse survival compared to patients with a normal BMI range (overall all cause mortality HR 1.43 95% CI, 1.03-1.97 and disease-specific mortality HR 1.50 95% CI, 1.06-2.12). Again, the low HRs for the BMI ≥ 30kg/m2 category may suggest a potential survival benefit in patients who are obese.

Conclusion: Weight loss and low BMI at 6 months post-surgery are independent poor prognostic indicators in patients who undergo surgery for oesophageal cancer. Being obese may have a survival benefit.

P132

The management of splenic injury in a new regional trauma centre

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Background: The Royal Preston Hospital has been designated a regional trauma centre, receiving patients from a population of 1.3 million. This observational audit is looking at the management strategies for traumatic splenic injury over a one year period.

Methods: This is a retrospective case note audit of all the patients who were coded for splenic injury between August 2014 and August 2015. The notes and images were read to confirm: diagnosis of splenic injury, whether imaging was performed, and the management of the patient. Other parameters looked at were diagnosis rates; whether the patients were major trauma activation calls; and whether conservative or surgical management was instigated.

Results: There were a total of 22 patients identified as having splenic injury. Two patients were excluded (one was an iatrogenic injury intraoperatively and the other was erroneous coding). Of the remaining 20 patients, 14 were successfully treated conservatively, six progressed to total splenectomy. Of the six operations, two went straight to theatre for trauma laparotomy because of haemodynamic instability, three were operated on because of high grade injury, and one was failure of conservative treatment. The only interventional management was total splenectomy. All cases were major trauma calls except for three patients- who had low grade injuries and were successfully treated conservatively.

Conclusion: Two thirds of the patients with splenic injury were managed conservatively. This rate may increase as the trauma services develop further. Use of interventional radiology for selective embolisation, and intraoperative use of splenorrhaphy, or partial splenectomy are still not practiced due to lack of resources and expertise respectively. Data on splenic injury from the year before the hospital was designated a trauma centre will be sought for comparison with the results of this audit.

P133

Efficacy of Laparoscopic Redo anti reflux surgery

Ali Haque, Haritharan Nageswaran, Khalid Zia, Ahmed Hassan

Princess of Wales Hospital, Bridgend, Cardiff, UK

Background: The current prevalence of gastro-esophageal reflux disease (GORD) in the Western World is estimated at 10-20%, anti reflux surgery (ARS) is often required. Although long-term patient satisfaction rates are high around 90% many will suffer recurrence of symptoms and up to 50% will eventually resume anti-reflux medications again. Redo ARS surgery is technically more challenging than primary ARS, mostly it has to be tailored in context to patient symptoms and peri-operative findings. The aim of this study was to analyse the results and efficacy of laparoscopic redo anti-reflux surgery.

Methods: All patients who had antireflux surgery between 2003–2015 were identified. Of these those who had Re-do antireflux procedure were identified. This was further divided into three groups, early (E-RS), late (L-RS) and emergency (Em-RS) redo surgery. E-RS was defined as return to theatre within 1 week for severe nausea, retching and dysphagia. A contrast barium swallow and endoscopy suggested delayed emptying of oesophagus into stomach, suggesting the fundoplication was too tight. Em-RS was defined as an operation for patients presenting with complete dysphagia at any time following ARS. L-RS was defined as surgery for chronic moderate symptoms not satisfactorily controlled by high dose PPI and other conservative measures.

Results: A total of 636 primary ARS operations were performed in our unit between 2003 and 2015 of which 17 (5.8%) underwent redo-ARS. In addition, 4 patients who had their initial surgery performed at a different hospital were referred to our unit and underwent redo-ARS. In total therefore, 41 patients were identified for this study: 12 E-RS, 4 Em-RS and 25 L-RS. While a wide spectrum of surgical techniques can be used. There was significant improvement in reflux symptoms in all these groups, along with resolution of dysphagia in those presented with dysphagia.

Conclusion: This study clearly establishes the safety and efficacy of Redo ARS. This study clearly demonstrates that surgical procedure for Redo ARS should be tailored around patient presenting symptoms and peri-operative findings.

P134

An Audit of Endoscopic Reporting in Suspected Oesophageal and Gastric Malignancy

Matthew Bedford, Sandhya Santharam, Danika Dowling, Bharat Markandey, Arouna Kapour, John Whiting, Ewen Griffiths

University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK

Background: The Royal Preston Hospital has been designated a regional trauma centre, receiving patients from a population of 1.3 million. This observational audit is looking at the management strategies for traumatic splenic injury over a one year period.

Methods: This is a retrospective case note audit of all the patients who were coded for splenic injury between August 2014 and August 2015. The notes and images were read to confirm: diagnosis of splenic injury, whether imaging was performed, and the management of the patient. Other parameters looked at were diagnosis rates; whether the patients were major trauma activation calls; and whether conservative or surgical management was instigated.

Results: There were a total of 22 patients identified as having splenic injury. Two patients were excluded (one was an iatrogenic injury intraoperatively and the other was erroneous coding). Of the remaining 20 patients, 14 were successfully treated conservatively, six progressed to total splenectomy. Of the six operations, two went straight to theatre for trauma laparotomy because of haemodynamic instability, three were operated on because of high grade injury, and one was failure of conservative treatment. The only interventional management was total splenectomy. All cases were major trauma calls except for three patients- who had low grade injuries and were successfully treated conservatively.

Conclusion: Two thirds of the patients with splenic injury were managed conservatively. This rate may increase as the trauma services develop further. Use of interventional radiology for selective embolisation, and intraoperative use of splenorrhaphy, or partial splenectomy are still not practiced due to lack of resources and expertise respectively. Data on splenic injury from the year before the hospital was designated a trauma centre will be sought for comparison with the results of this audit.

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Conclusion: This study clearly establishes the safety and efficacy of Redo ARS. This study clearly demonstrates that surgical procedure for Redo ARS should be tailored around patient presenting symptoms and peri-operative findings.
Introduction: The London Cancer Alliance published guidelines in 2014 stating ‘best practice’ in endoscopy reporting. This audit aimed to determine compliance with these guidelines in a regional tertiary upper gastrointestinal surgical unit.

Methods: This audit was completed in 2 cycles; the first documented compliance retrospectively from 2013 to 2014, prior to publication of the guidelines; the second re-audited compliance in 2015 following dissemination of ‘best practice’ and the results of the first loop. All patients presenting to a single regional tertiary referral unit with confirmed oesophageal or gastric cancer were included. Performance against a number of relevant indicators was documented and compared between the 2 loops.

Results: 153 patients were included in the first cycle and 87 in the second. The majority of endoscopies were performed by Consultant Physicians in both cycles. In oesophageal cancers, the upper margin of the tumour was stated consistently (83–7% cycle 1, 89–7% cycle 2) but the lower margin of the tumour and its relationship to the gastro-oesophageal junction was poorly documented in both cycles (<60% in each). In gastric cancer, although the location of the tumour was documented in >90% of cases in both cycles, its size was only stated in 34–7% and 58–6% of patients in cycle 1 and 2 respectively. In both oesophageal and gastric cancers, the required minimum of 6 biopsies from suspected lesions was still only achieved in 38–6% and 79–3% of cases in cycle 2 respectively. Despite this, however, only 6–9% of oesophageal and 0% of gastric cancer patients had to have repeat endoscopies in 2015 purely owing to inconclusive histological diagnosis at the first sitting.

Conclusions: In this audit there was little change in compliance with key standards relating to endoscopy reporting in our institution. It is crucial that all endoscopists understand that the attainment of adequate biopsies to permit histological diagnosis is not the only goal of the procedure, as other important information (such as tumour size and location) can have a significant effect on treatment planning and negate the requirement for repeat procedures. The results of this audit have now been re-presented across our endoscopy division and the guidelines re-advertised. A further re-audit will now take place.

P135

Tension enterothorax and hepatothorax due to a diaphragmatic hernia: successful emergency repair: a case report

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Background: Spontaneous acquired diaphragmatic hernia without any apparent history of trauma is a very rare condition and is difficult to diagnose. A spontaneous tension enterothorax and hepatothorax has not previously been described.

Methods: We aim to present a case of a 70 year old female patient who presented with tension enterothorax and hepatothorax due to a large diaphragmatic hernia through the central tendon.

Results: A 70 year old female patient with known IVC filter and no previous history of trauma, presented at a district general hospital with acute severe respiratory distress and stridor. Initially she was treated as epiglottitis, however the nasendoscopy was normal and clinical picture deteriorated rapidly requiring emergency intubation and ventilation. Further investigations (CXR, CT scan chest-abdomen and pelvis) demonstrated a tension enterothorax with complete collapse of the right lung and tracheal deviation secondary to right-sided hepatothorax and enterothorax. The patient was transferred as an emergency to the Regional Oesophagogastrectic Unit at the Royal Surrey County Hospital. She underwent an emergency laparotomy which revealed herniation of duodenum, porta hepatitis, right lobe of liver including segment IV, gall bladder, right colon (distal small bowel to mid-transverse colon) through the inferior vena cava opening. The hernia was carefully reduced and the diaphragmatic defect was repaired primarily with heavy non-absorbable sutures and re-enforced with physiomesh. Her postoperative course was uneventful. The ITU stay was 8 days and the patient was discharged on the 12th post-operative day. At two months post-surgery the patient remained well with good respiratory function and return to normal activities. There were no radiographic signs of recurrence of the hernia.

Conclusion: Non traumatic herniae through the central tendon of the diaphragm are extremely rare. A combination of enterothorax and hepatothorax is extremely rare and tension enterothorax has not previously been described. High clinical suspicion and basic investigations are essential in making a correct diagnosis and preventing life-threatening complications.

P136

Review of Gastro-intestinal stromal tumours in a tertiary referral unit – A 13 year experience of surgical outcomes, treatment and survival – Is it time for a national database?

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Background: Advances in imaging, endoscopy and histology have improved our ability to diagnose gastro-intestinal stromal tumours (GIST). Individual units collect their own data but as yet there is no single national database available. This study aims to review the multidisciplinary approach in a tertiary referral centre, including treatment and survival.

Methods: A retrospective analysis was performed on patients who were diagnosed, or referred to our tertiary referral centre with GIST. Information was obtained from a prospectively collected database of GIST patients between January 2003–December 2015.

Results: A total of 101 patients who underwent surgical resection were included in this study. The mean patient age was 62.7 years, there was a slight female preponderance (Male: female 1:3). 23 out of 101 patients had high grade GIST. All patients with high grade GIST were assessed for adjuvant treatment with Imatinib and 21 (91%) received the same. The primary tumour site for the vast majority of GIST patients in our centre was gastric (86%). The mean tumour size was 10cm for high grade GIST, and 5cm for low grade GIST. The most common type of surgery performed in the management of GIST was partial gastrectomy. There were no perioperative deaths. The rate of disease recurrence was 3% over the period of follow up, with 1 death 18 months following diagnosis of recurrence and subsequent treatment.

Conclusion: Treatment of GIST varies according to grade and stage of disease. Because of its aggressive nature and associated high rate of recurrence, patients with high grade disease were appropriately treated with Imatinib. Surgical treatment is safe, a multi-disciplinary approach involving surgeons, specialist nurses, oncologists and radiologists is vital in managing patients with GIST, reducing recurrence rate, and improving their overall survival. A national database will help in sharing experience and formulating best treatment for patients.

P137

Provision of oesophagogastric cancer palliation services in Scotland: a survey of the Upper Gastrointestinal Cancer Managed Clinical Network

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Background: Patients with advanced oesophagogastric (OG) cancer often require symptom palliation, principally of pain and dysphagia. Anecdotal evidence suggests a wide variation in access to palliative modalities and preferences. This study assesses the current provision of palliative interventions throughout Scotland.

Methods: An electronic questionnaire was submitted to members of the Scottish Upper Gastrointestinal Cancer Managed Clinical Network via email. A subsequent reminder email was sent in order to increase response. Data was collected via the SurveyMonkey system.

Results: A total of 55 respondents completed the questionnaire with representation of all 4 Scottish regional MCNs. No replies were received from Orkney, Borders and Western Isles Health Boards. The majority of respondents...
were consultant surgeons (40%). Most units surveyed had access to endoscopic (100%) and radiologic (75-90%) stents, however only 55% of respondents had access to endoscopic laser. Argon beam was available to 86-5% for palliation and bleeding control. 77.5% use endoscopic stenting on a frequent basis compared to 31.1% using radiologic stents. 33.1% use laser on a frequent basis while 35.7% never use laser (all within units with no access). 29.1% of respondents want access to techniques that they do not currently have available. 12 respondents (22%) would use laser but do not have access (including 37% of responding surgeons). The majority cited severity of dysphagia (95-6%), endoscopic findings (91-3%), patient performance status (86-9%), and disease stage (86-7%) as major factors influencing modality choice. Despite the variation in available modality between respondents, 93-8% felt they could provide adequate palliation within their unit (or by local/regional referral). 80-9% would welcome the inclusion of performance indicators related to palliative management, many suggesting assessment of time between the palliative decision and receiving palliation.

**Conclusion:** Most OG units in Scotland are able to provide adequate palliation but there is variation between units in access to specific treatment modalities. Most respondents believe access to endoscopic laser therapy could be improved. Scotland produces Quality Performance Indicators for OG cancer and the assessment of palliation of advanced OG cancer would appear to be beneficial.

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**P138**

Laparoscopic versus open gastrectomy for adenocarcinoma of the stomach: postoperative and long term oncological outcomes

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**Background:** This study aims to compare post-operative and long term oncological outcomes for open gastrectomy (OG) versus laparoscopic gastrectomy (LG) for adenocarcinoma of the stomach in a western population.

**Methods:** A retrospective cohort study was conducted between November 2006 and October 2016 for consecutive patients undergoing gastrectomy with curative intent for adenocarcinoma of the stomach. Univariate analysis was used to compare post-operative outcomes between laparoscopic subtotal gastrectomy (LSG) and open subtotal gastrectomy (OGS). Logistic regression with bootstrapping validation, was used to identify independent risk factors for prediction of 2, 3 and 5 year overall survival for all patient undergoing subtotal/gastrectomy.

**Results:** A total of 130 cases were included in the final analysis. Demographic and staging variables were comparable between LSG (n = 30) and OSG (n = 49) patients. LSG was associated with reduced radicality of LN dissection (p = 0.003), intra-operative blood loss (150ml (IQR, 100 – 250) vs 523ml (IQR, 338 – 973), p = 0.011), post-operative lactate (0.95 (IQR, 0.7 -1.3) vs 1.3 (IQR, 1 – 1.8), p = 0.028) and an increased incidence of post-operative bleeding (3 patients vs 0, p = 0.024) when compared to OSG. Overall 5 year survival (n = 70) for LG vs OG was 52.2% versus 42.6% (p = 0.448), respectively. The number of positive lymph nodes was the only independent risk factor for 2 and 3 year survival [2 year OR, 0.85 (CI, 0.77 -0.94), p = 0.001; 3 year OR 0.88 (CI, 0.79 -0.97), p = 0.013]. Pre-operative ASA grading was the only independent risk factor for 5 year survival (OR 0.22 (CI, 0.07 -0.72), p = 0.012). Pathological staging, Radiality of LN dissection, age and operative approach did not influence survival outcomes.

**Conclusion:** LSG is associated with a decreased volume of intra-operative blood loss and an increased incidence of post-operative bleeding requiring transfusion/surgical intervention. Overall 2, 3 and 5 year survival is not influenced by operative approach.

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**P139**

Pre-operative Positron Emission Tomography-Computed Tomography in Oesophageal Adenocarcinoma patients: SUV max and FDG-avid lymph nodes assessment as prognostic markers

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**Background:** Positron Emission Tomography is an essential part of oesophageal cancer patients initial staging. The objective of this study is to evaluate PET/CT role performed before neoadjuvant treatment and surgery, for patients treated with curative intent, and its value as a prognostic tool, taking into consideration the maximum standardized uptake value (SUV max) of the primary tumour and the presence or absence of FDG-avid local or distant lymph nodes.

**Methods:** This is a cohort study based on retrospective analysis from 305 patients, treated in a single tertiary center for oesophageal and gastrooesophageal adenocarcinoma, during a seven-years period, from January 2007 until December 2013. A group of 106 patients fulfilled study’s criteria and were treated with curative intent, while non-surgical candidates, non-adenocarcinoma patients and patients with advanced disease were excluded. All the above patients had full staging investigations with upper gastrointestinal endoscopy and biopsy, CT scanning, endoscopic ultrasound (EUS), PET/CT and were discussed at multidisciplinary team meeting. Neoadjuvant chemotherapy according to established protocols was introduced first, followed by tailored surgical approach for each patient. Specific FDG-PET/CT findings were recorded and analysed, including the SUV max of the primary lesion and FDG-avid local and distant lymph nodes. Survival data was obtained from the hospital’s electronic administrative system, individual patient’s case notes, outpatient or general practitioner records.

**Results:** A total of 106 patients were included in this cohort study (91 men, 13 women), with a median age of 63 years. SUV max uptake was divided in high and low median value, with a value of 10 used as cut-off. No significant difference in overall survival was demonstrated between the two groups (p = 0.74). FDG-avid lymph nodal disease was found in 21/106 (19.8%) patients, while final histopathology revealed positive nodes (≥N1) in 72/106 (67.9%) of patients. PET/CT’s sensitivity of detecting positive lymph nodal metastasis was 26-4%, and specificity was 94-1%, which is consistent with current literature. Moreover, no survival difference was found between patients with PET/CT FDG-avid lymph nodes and those with negative nodes (p = 0.62). It is also noted that for the same cohort, EUS was more sensitive in assessing local lymph nodes (sensitivity 55%, specificity 46-1%). Lymph nodal positivity in both staging modalities together does not correlate significantly with overall survival either.

**Conclusions:** PET/CT is an important modality in oesophageal adenocarcinoma patients staging, but for assessment of distant metastatic disease. The presence of subcentimeter lymph nodal disease is below resolution on PET/CT and may not be distinguished from the primary tumour’s uptake. In addition, SUV max of the primary tumour is not directly related to prognosis as demonstrated in previous studies. In summary, high SUV max and local lymph nodal involvement on initial PET/CT or EUS should not preclude oesophageal cancer patients from consideration for radical treatment.

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**P140**

The Utility of Post-Chemotherapy PET Scans in Resectable Oesophageal Adenocarcinoma

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Background: The incidence of oesophageal adenocarcinoma (OAC) in the UK has risen by 6 fold in the last 40 years to be the highest in Europe. Patients diagnosed with OAC are deemed suitable for oesophageal resection following an initial PET scan which can detect occult metastatic disease in up to 11% of cases. However, some patients experience progression of their tumours whilst on chemotherapy and so our centre carries out PET scanning following chemotherapy to assess response and confirm resectability. We sought to examine the utility of this approach in selecting patients for radical surgery.

Methods: Clinico-pathological staging data and survival outcomes were collected for all patients receiving neoadjuvant chemotherapy with a view to progressing to surgical resection for OAC at The Northern Ireland Cancer Centre between 2011 and 2013. All patients selected for a potentially curative pathway were included and were planned to receive a pre- and post-chemotherapy PET scan.

Results: 110 patients were identified (90 male, 20 female) with a median age of 64 (range 32–82) who were treated with neo-adjuvant epirubicin, cisplatin and 5-fluorouracil neo-adjuvant chemotherapy. A total of 21 patients (19.1%) did not receive a resection for the following reasons; their disease being unresectable at laparotomy (n = 8; 7.3%), being reassessed as unfit for surgery (n = 4; 3.6%), death during neo-adjuvant therapy (n = 1; 0.9%), metastatic disease identified on post-chemotherapy PET (n = 8; 7.3%). Patients who did not progress to surgery were significantly older (p = 0.019) but did not display any difference in their clinical T/N stage or tumour differentiation compared to patients who received a resection.

Conclusion: Post-chemotherapy PET scanning identifies a cohort of patients no longer suitable for radical oesophagectomy and further adds to patient selection algorithms.

Revision hiatus hernia surgery: Experience from a large single centre study

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Background: For revision hiatal surgery, there are no reports on the types of failures and/or location of crural defects over time following surgery, and only limited reports on outcomes of revision surgery. The aim of this study was to report the temporal changes in types of hernia recurrences and location of crural defects following primary surgery and determine patterns of failure for future potential prevention. Quality of life(QOL) scores in one of the largest single-surgeon database (1992–2015). Recurrence was diagnosed on gastroscopy and/or contrast study. QOL was measured using modified Visk score, dysphagia score, atypical reflux symptom score, satisfaction score, and Gastrointestinal Quality of Life Index(GIQLI).

Results: 284 patients, median age 60 (68-42-69-1) had median follow-up following primary surgery of 122 (875-3-180-3) months and 91 (640-5-152-5) months after revision surgery. The most common recurrence in the early period was "telescope"(42%), but overall, fundoplication transhiatal migration was the predominant recurrence. The location of crural defects changed over time as antero-posterior defects were most common in the early period (45.5% in <1 year) but decreased over time (30.1% 1-3 years) whilst anterior defects increased in the long-term with 35.9%, 40% and 42% at 3–5 years, 5–10 years and >10 years respectively. Revision surgery intra-operative morbidity was 17.7%, mainly gastric (9.5%) and oesophageal (2.1%) perforation. Recurrence following an initial resection surgery was 21% (44/212). There were significant improvements in Visk score(3.3-2.4), modified Dakkk score(2.3-2.4), atypical reflux symptom score(2.3-1.5) and satisfaction scores (0.9-2.2), but no difference in GIQLI following revision surgery.

Conclusion: Revision anti-reflux surgery has higher morbidity but achieved acceptable long-term satisfaction and quality of life. The most common type of early recurrence following primary surgery is telescoping, and overall is wrap herniation. Anterior crural defects may be strong contributor to hiatus hernia recurrence. GIQLI does not appear to adequately detect improvements in QOL after revision surgery.

Safe insertion of nasogastric tubes: A Quality improvement project on practice and training amongst health care professionals

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Background: Nasogastric (NG) tube insertion is common practice; it carries a small risk of complications. However, the National Safety Agency (NSPA) received reported 21 deaths and 79 cases of harm in a five-year period due to feeding into the lungs through misplacement of NG tubes. Healthcare professionals, including junior doctors, are at the forefront to confirm correct placement of NG tubes, yet many do not receive formal training. Our project assessed the knowledge and confidence amongst healthcare professionals in NG placement practice.

Methods: A questionnaire survey was designed and distributed to medical and surgical departments, measuring knowledge and confidence levels with regards to NG tube placement and guidance. Initial results concluded both poor levels of knowledge and confidence amongst healthcare professionals. Consequently, intervention consisted of short theory and practical teaching sessions for junior doctors and nursing staff, along with completion of an e-learning module. The questionnaire survey was distributed again post-teaching sessions.

Results: Significant improvement in knowledge and awareness of NG tube guidelines was concluded. 97% formally trained in x ray interpretation (26% improvement), 94% doctors confident with x ray interpretation of NG tubes (14% improvement), 22% improvement in confidence of NG tube insertion.

Conclusion: Improving safety and quality in health care is of critical importance and this study has highlighted a gap in training with regards to nasogastric tube practice. Misplacement of NG tubes is avoidable and therefore our study has indicated the use of teaching, training and raising awareness as a simple solution to reduce the preventable harm to patients.

Changes in patterns of lymph node yield and tumour free resection margins in resection surgery for oesophago-gastric (O-G) cancer

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Background: Adequate lymph node resection and tumour free resection margins are accepted quality indicators of curative resection surgery for oesophago-gastric cancer. We examined how performance on these two indicators has changed in England and Wales since 2007.

Methods: This study analysed data from the two phases of the National Oesophago-Gastric Cancer Audit, the first covering patients diagnosed between October 2007 and June 2009 and the second covering patients diagnosed between April 2013 and March 2015. We examined whether there had been any changes in the patterns of lymph node resection, and the proportion of positive resection margins in patients undergoing curative surgery over these two periods. Proportions are given with 95% confidence intervals.

Results: There were 2200 oesophagecтомies and 1412 gastrectomies performed in 2007/09 (period 1) and 3031 oesophagecтомies and 1632 gastrectomies performed in 2013/15 (period 2). The proportion of patients with lymph node yield ≥ 15 for oesophagectomy increased from 67-0% in period 1 to 78-3% in period 2. The proportion of patients with lymph node yield ≥15 for gastrectomies increased from 63-5% in period 1 to 73-5% in period 2. Patients with positive longitudinal margins for oesophagectomies decreased from 6-4% (5-3%–7-6%) in period 1 to 4-8% (3-7%–5-3%) in period 2. Patients with positive circumferential margins for oesophagectomies was 29-0% (26-9% to 31-2%) in
period 1 and 28.4% (26.7%-30.1%) in period 2. Patients with positive resection margins for gastrectomies was 8.9% (7.4%-10.8%) in period 1 and 8.7% (7.3% to 10.2%) in period 2.

**Conclusion:** There has been an increase in lymph node yield for both oesophagectomy and gastrectomy, and a decrease in patients with positive longitudinal margins for oesophagectomies. There was only marginal changes over time in circumferential margin positivity for oesophagectomy and longitudinal margin positivity for gastrectomy.

### P144

**Perioperative changes in nutritional status in patients with Oesophago-gastric (OG) cancer and the challenges of meeting nutritional requirements orally**

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**Background:** Malnutrition is a well recognised problem in patients with OG cancer and it can have significant impact on outcomes. Nutritional assessment is often limited to weight changes and body mass index (BMI). Changes in lean body mass (LBM) however, may have a greater influence on outcomes. Muscle function responds earlier to short term nutritional deprivation and nutritional repletion than muscle mass or BMI. The aims of the study were to explore the use of HGS, as a measure of muscle function, in nutritional assessment and to examine the challenges of meeting dietary requirements orally.

**Methods:** Data on perioperative weight, height, BMI, hang grip strength (HGS), dietary intake and compliance to oral nutritional supplements (ONS) was collected prospectively. HGS was analysed to determine impaired muscle function. Dietary intake was analysed using the software ‘Forest Field DietPlan 6’ and compared against estimated requirements calculated using the Henry equations.

**Results:** Fifteen patients who underwent OG surgery between March-May 2016 were included. The average weight, BMI and HGS decreased perioperatively. The overall mean percentage weight loss increased from 3.1% pre surgery to 6.6% at post discharge follow up. Eleven out of 14 (79%) patients lost greater than 5% weight by this 2 weeks post discharge review. Three of these patients (21%) lost greater than 10% weight. Nine (60%) patients were found to be below the threshold for adequate muscle function on the day prior their surgery. Eight of these patients were weight stable/<5% weight loss. Of the 12 patients reviewed post discharge, 7 (58%) had a HGS below the threshold. Average energy and protein requirements ranged from 1350-2400kcal and 66-105g respectively. The average inpatient oral intake was 1045kcals and 39g protein age energy and protein requirements ranged from 1350-2400kcals and 66-105g.

**Conclusion:** Impaired muscle function was seen in patients who were weight stable/minimal weight loss. Meeting nutritional requirements is challenging, even with the use of ONS. Further research is required on the implications of LBM/muscle function impairment on clinical outcomes and interventions to minimise this.

### P145

**Reporting of Outcomes in Gastric Cancer Surgery Trials: A Systematic Review**

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**Background:** Inconsistent reporting of outcomes in trials impacts negatively on the ability to produce robust evidence-based recommendations for clinical practice. This review examines the degree of variation in the reporting of outcomes described by gastric cancer surgery trials.

**Methods:** Systematic literature searches were undertaken to identify randomised control trials (RCTs) published between 1996 and 2016 investigating therapeutic surgical interventions for gastric cancer. Outcomes were listed verbatim, categorized into groups (outcome domains) and examined for definitions and measurement instruments.

**Results:** Of 2794 abstracts screened, 52 eligible publications from 32 trials (9,073 participants) were identified. A total of 756 outcomes were reported of which 660 (87 per cent) were undefined. No single outcome was reported by all trials. ‘Complications’ was the most frequently reported ‘outcome domain’ in which 252 unique terms were described, 12 trials (38 per cent) classified complications according to severity, with 5 (16 per cent) using a formal classification system (Clavien-Dindo or Accordion scale). A total of 33 unique terms were used to describe ‘mortality’ after surgery. Of 27 trials which described ‘short-term’ mortality, 17 (63 per cent) provided one of 5 definitions. Seven trials (22 per cent) described ‘patient-reported outcomes’ and 3 (9 per cent) measured ‘quality of life’ after surgery.

**Conclusion:** Reporting of outcomes in gastric cancer surgery trials is inconsistent and lacks methodological rigour. A consensus approach to develop a minimum set of well-defined, standardised outcomes to be used by all future trials examining therapeutic surgical interventions for gastric cancer is needed. This should take into account the views of all key stakeholders including patients. The GASTROS (GAstring cancer Surgery Trials Reported Outcomes Standardisation) study aims to address this problem.

### P146

**Nurse & Dietitian-led clinics – enhancing patient & carer experience of post-operative care in oesophago-gastric cancer surgery**

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**Background:** Oesophagectomy and gastrectomy offer curative treatment for oesophago-gastric (OG) cancers. Recovery from these major procedures requires full engagement from patients, carers/relatives and intensive support from the specialist multidisciplinary team. Factors limiting post-operative recovery are multi-factorial, including the rigors of surgical resection, managing surgical complications; dietary challenges and the psychology of cancer and survivorship. We have identified that pressures on consultant-led surgical clinics can result in limited flexibility to support individuals who are ‘failing to thrive’. Specialist Nurse and Dietitian-led (NS-DT) clinics are a novel approach to improving care and experience following OG cancer surgery. Evaluation was conducted following their introduction at Queen Alexandra Hospital, Portsmouth.

**Methods:** Patients identified with multiple factors limiting progression of post-operative recovery were invited to the NS-DT fortnightly clinic. A joint consultation template was devised to facilitate holistic assessment, treatment/advice by the Specialist Nurse and Dietitian during a 30-minute appointment, including mobility, pain, surgical wounds and drain sites, enteral feeding tube care, medications, weight loss, upper/lower GI symptoms and dietary intake adequacy. All new attendees during May 2015 to April 2016 were asked to complete an anonymous questionnaire with 5 questions to evaluate their experience. Questionnaires were collated and analysed.

**Results:** 77 NS-DT clinic appointments were attended by patients and carers/relatives during the study period. 36 (47%) were initial appointments. 25 questionnaires were returned – a response rate of 69%. 100% (25) agreed their appointment was beneficial. 100% (25) agreed treatment or advice was given. 100% (25) agreed their questions or issues were dealt with. 100% (25) agreed treatment/advice by the Specialist Nurse and Dietitian during a 30-minute appointment, including mobility, pain, surgical wounds and drain sites, enteral feeding tube care, medications, weight loss, upper/lower GI symptoms and dietary intake adequacy. All new attendees during May 2015 to April 2016 were asked to complete an anonymous questionnaire with 5 questions to evaluate their experience. Questionnaires were collated and analysed.

**Conclusion:** Joint NS-DT clinics are successful in enhancing patient/carer experience following OG cancer surgery and have potential to save Consultant time. This patient-centred approach may be readily replicated across regions, and different surgical cohorts. More work is needed to assess impact on clinical outcomes.
P147
Minimally invasive oesophagectomy with intrathoracic anastomosis, before and after an enhanced recovery programme

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Background: According to Cancer Research UK, there are roughly 8,750 new diagnoses of oesophageal cancer in the UK annually. Coupled with this malignancy's unsatisfactorily high levels of morbidity and mortality, urgency for advances in post-oesophagectomy care was evident. Consequently, Enhanced Recovery After Oesophageo-gastric Surgery (EROS) was developed and implemented at the University Hospital Southampton to improve patients' post-operative outcomes. This study's purpose was to compare the length of stay in hospital and post-operative complications of patients who underwent minimally invasive oesophagectomy with intrathoracic anastomosis (MIO-2), before and after the implementation of EROS.

Methods: A retrospective data analysis was conducted on all patients who underwent an elective MIO-2 at the University Hospital Southampton between July 2008 and January 2016. Patients were divided into EROS and pre-EROS cohorts and all data were compared between these groups. All statistical analyses were performed using SPSS.

Results: 151 patients were included in this study (24% EROS patients versus 76% pre-EROS patients). Median length of stay in hospital was 9 days for EROS patients versus 12 days for pre-EROS patients (p = 0.001). Post-operative complication rates were similar between the two groups: major complications (Clavien Dindo grades 3–5) were observed in 19% of EROS patients versus 24% of pre-EROS patients. Return to theatre rates were more than halved (6% versus 13%) and emergency readmission rates were nearly doubled (9% versus 5%) for EROS patients when compared to their counterpart.

Conclusion: EROS successfully reduced patients' median length of stay in hospital by 3 days. Unfortunately, due to the restraints of the study design, it cannot be concluded that EROS makes a significant difference to post-oesophagectomy complication rates, return to theatre or readmission rates. Thus, the need for a randomised controlled trial to reveal the programme's potential benefits is evident.

P148
Outcomes following endoscopic palliation of oesophageal cancer

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Background: There are currently limited data on the comparative success of endoscopic laser therapy (NLT) and self-expanding metal stents (SEMS) as palliative measures in patients with non-resectable oesophageal cancer. This study aims to assess and compare the outcomes of these methods of endoscopic palliation.

Methods: Patients with non-curative oesophageal/gastro-oesophageal cancers with dysphagia were identified prospectively and consented to swallow assessment and follow-up. Patients underwent SEMS or NLT at the discretion of the treating endoscopist. Initial standardised swallow scores (0–4) were assessed. Patients were followed for a minimum of 1 year or until death. All subsequent interventions were recorded as well as survival.

Results: 31 patients were recruited (30M vs 8F, mean age 70–8). 24 (74%) patients had adenocarcinoma. 7 (22–5%) underwent chemotherapy/chemoradiotherapy prior to intervention (NLT group 3, vs SEMS group 4×6 (19–4%) following (NLT:4,SEMS:2). There was no significant difference in age, sex or chemotherapy (pre or post) between the NLT:SEMS groups. Median initial swallow score was 3 (1–6 (9–9%); 2 (85–88); 3 (10–12%); 4 (16–16%). 19 (61%) patients underwent NLT as primary procedure. 20 (65%) patients required at least one subsequent procedure (median 1, range 0–8). Mean time to repeat procedure was 82 days (range 7–424). Those receiving NLT as primary procedure were more likely to require subsequent therapy (p = 0.004) and multiple procedures (p = 0.001). 8 (42%) patients initially undergoing NLT subsequently required SEMS, while no SEMS patients underwent subsequent NLT. Those with initial swallow scores of 1 or 2 were more likely to be maintained with NLT alone. Those with score 3 or 4 were more likely to progress to SEMS (p = 0.039). Time to repeat procedure was greater in the initial SEMS group (p = 0.001). Median survival was 133 days for NLT vs 60 days for SEMS (p = 0.412). There was no correlation between initial swallow score and survival.

Conclusion: In this series, patients selected for NLT had a trend towards longer survival, but were more likely to require repeated procedures. Those with lower early dysphagia scores at first intervention were more likely to be maintained by NLT alone.

P149
Compliance with elements of enhanced recovery protocols for oesophago-gastric surgery for multi-disciplinary collaborative quality improvement

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Background: Enhanced recovery protocols (ERPs) aim to reduce post-operative complications and length of stay by decreasing peri-operative stress and returning the body's physiology to normal as soon as possible. Whilst much of the early research in this field focused on lower gastrointestinal surgery and has demonstrated an improvement on post-operative outcomes and hospital stay, the impact in oesophago-gastric cancer surgery has not always been reproducible and consistent. There are very few studies on compliance with the elements. This study was undertaken to examine compliance with an enhanced recovery protocol for oesophago-gastric resections in a specialist centre.

Methods: All patients undergoing oesophagectomy and gastrectomy between October 2015 and April 2016 were reviewed to establish compliance with enhanced recovery protocols. Data was extracted from the hospital's electronic records.

Results: 14 patients were identified. 93% of patients had epidural analgesia following surgery and 86% received inotropic support. All of the patients stood out of bed on day one following surgery and 50% walked once but none met the goal of walking at least twice. On day two, 71% met the target for walking, increasing to 93% by day five. 14% reported moderate or severe pain that limited mobility or coughing on day one, and this rose to 43% on days three and four. Half of the patients studied developed a post-operative pneumonia.

Conclusion: Early mobilisation and effective pain control are key component of ERPs and these findings show demonstrate the effectiveness of ERPs in early mobilisation and pain control. Audit of compliance with ERP elements and feedback to the multi-disciplinary team will lead to incremental collaborative improvement efforts to improving compliance and overall care, resulting in better outcomes.

P150
Impact of centralisation of upper GI (UGI) cancer services on the provision of surgery for patients with benign UGI disease

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Background: Centralisation of upper gastrointestinal (UGI) cancer services may have a knock on effect on the provision of surgery for benign UGI disease such as biliary and gastro-oesophageal reflux disease (GORD). The aim of this study was to determine the recent trends in cholecystectomy and anti-reflux surgery in a single University Health Board in South East Wales following centralisation of UG I cancer services in August 2010.

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**P151**

**Stenting in the management of anastomotic leak following Ivor Lewis Oesophagectomy**  
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**Background:** Anastomotic leak following Ivor Lewis Oesophagectomy may pose a difficult clinical challenge, and there is no consensus on how best to manage this complication.

**Methods:** A retrospective review of all patients who underwent Ivor Lewis Oesophagectomy between 2011 and 2014 at a high volume, regional tertiary referral unit was performed. Data were extracted from a prospectively maintained clinical database and management strategies and outcomes were compared.

**Results:** Over the 5 year period, 217 patients underwent oesophagectomy. Anastomotic leaks were detected in 14 (6.5%). One patient died prior to re-intervention, and another patient was managed conservatively. Five of the remaining 12 patients underwent endoscopic stenting in conjunction with radiological drainage. The remaining 7 underwent reoperative thoracotomy: T-tubes were placed in the leak in four patients; two patients were stented following thoracotomy; and one patient had the anastomosis taken down with formation of a cervical oesophagostomy. Stenting alone was associated reduced infection and chyle leak were also lower (wound infection 1.5% MIO 3.5% open, p = 0.6; chyle leak 1.5% MIO, 6.7% hybrid, p = 0.2).

**Conclusion:** Our results show no negative impact of MIO on survival, and disprove ideas that oncological clearance is compromised by a minimally invasive approach. Respiratory and wound complications are lower in MIO, but rates of anastomotic leak and strictures are increased. This may be due to the longer length of conduit and subclinical ischaemia at the anastomosis and merits further evaluation.

**P153**

**Enhanced Recovery Programme for Oesophagectomy: A Stepwise Evolution**  
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**Background:** ERAS is not just about discharging patients home early after surgery. We believe that it should be measured along with reduction of morbidity and mortality and this eventually will lead to early discharge. Morbidity after procedures like oesophagectomy ranges around 30%-40%. Complications like anastomotic leakage, bleeding and chyle leak has been addressed successfully by surgeons with low prevalence. However chest infection after oesophagectomy remains high up to 26%-30%. We describe the experience and outcomes of an evolving ERAS programme for oesophagectomy.

**Methods:** A retrospective review was performed of a prospectively created database for patients undergoing oesophagectomy for malignancy over a seven year period in a District General Hospital.

**Results:** During the seven year period 79 oesophagectomies were performed of which 75 were hybrid minimally invasive procedures, 2 totally minimally invasive and 2 open resections. ERAS interventions and changes were introduced incrementally over the study period and included:

1. Preoperative counselling,
2. Laparoscopic abdominal approach omitting need of upper Mid line abdominal incision
3. Inserting one chest drain instead of two,
4. Replacing traditional chest drain bottle to Heimlich valve and bile bag and hence helping early mobilization with less tubes hanging around,
5. Omitting thoracic epidural and replacing it with intercostals catheter block for post operative analgesia.
6. Avoiding the use of postoperative opioids.
7. Avoiding feeding jejunostomy to minimize its complications.

Overall, there was one death (1.26% mortality rate), two anastomotic leak, two chyle leak, two wound infection and one postoperative bleed, resulting in 2 morbidity. We have not only improved quality of life for our patients but also savings to the NHS.

**P152**

**Non-Inferiority of Minimally Invasive Oesophagectomy: An 8-year Retrospective Case Series**  
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**Background:** The trend towards laparoscopic surgery seen in other specialties has not occurred at the same pace in oesophagectomy. This stems from concerns regarding compromised oncological clearance, and complications associated with gastric tube necrosis and anastomatic failure. We present our experience of Minimally Invasive Oesophagectomy (MIO) compared to open and hybrid surgery. We aim to ascertain non-inferiority of MIO by evaluating the impact of surgical approach on survival, oncological clearance by resection margin and lymph node harvest, and post-operative complications.

**Methods:** Data was sourced retrospectively 2008–2015. Three surgical approaches were studied. MIO (3-stage Mckeown), hybrid (2-stage Ivor Lewis, laparooscopy, thoracotomy) and open (2-stage Ivor Lewis). Classification was on an intention-to-treat basis.

**Results:** 5-year survival was 54.2%. Type of surgery had no statistically significant impact on survival at any stage of disease (Stage I p = 0.975; stage II p = 0.2; stage III p = 0.775). There was no statistically significant difference in oncological clearance between surgical procedures when compared by disease stage (p = 0.49). A higher number of nodes were harvested in hybrid (mean 29.4, SD 10.8) and open surgeries (mean 26.7, SD 10.9) than in MIO (mean 20.9, SD 7.9; p = 0.00000218). However, the number of lymph nodes resected did not have an impact on risk of recurrence (recurrence, mean 27.6 (SD 11.6), no recurrence, 25.6 (SD 10.15) (p = 0.168). Anatomostic leaks (17.9%) and strictures (22.4%) were more common in MIO than hybrid or open surgery (leaks p = 0.08, strictures p = 0.000931), although associated morbidity was lower. Respiratory complications including symptomatic pleural effusions were less common in MIO (2.9%) compared to hybrid (13.3%) (p = 0.02). Wound infection and chyle leak were also lower (wound infection 1.5% MIO 3.5% open, p = 0.6; chyle leak 1.5% MIO, 6.7% hybrid, p = 0.2).

**Conclusion:** Since centralisation of UGI cancer services, the total number of laparoscopic cholecystectomies have not changed but the proportion of open cholecystectomies have decreased significantly. This could be a result of non-UGI surgeons performing non-complex biliary surgery laparoscopically. The number of anti-reflux procedures and hiatal hernia repairs have also decreased. Further analyses on the waiting times for benign UGI surgery would help quantify the impact of centralisation of UGI cancer services.
reoperations (2,53%). Median length of stay was 6 days (range 3 – 40). With the most recent protocol expected length of stay being 4–5 days.

**Conclusions:** Our experience demonstrates that with introduction of well calculated measures and changes, ERAS ‘type’ interventions is a safe and effective way of optimising recovery after oesophagectomy. We believe that measures like ERAS helps in minimizing mortality and morbidity hence early functional return and home discharge comes as a by product.

**P154**

**Changing patterns of management and outcomes for early Oesophageal Adenocarcinomas in England and Wales**

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**Background:** Only 1 in 20 oesophageal adenocarcinomas are diagnosed at early stage1. In this study, we investigated the patterns of management for oesophageal adenocarcinomas in England and Wales, and patient outcomes.

**Methods:** This study used data from the National O-G Cancer Audit. It compared patients diagnosed with early stage (T0/I, N0, M0) oesophageal adenocarcinoma in the financial year (April-Mar) of 2008, with those diagnosed in the financial year of 2013. Outcomes considered: proportion of patients managed with curative intent, treatment modality and patient outcomes at 1 year.

**Results:** A similar number of patients were diagnosed with early stage cancer over both time frames (n = 202 vs n = 193). Over the 5 years, the proportion managed with curative intent increased (77.4% to 83.4%, p = 0.13); this increase was largest among patients aged ≥75 years (48% to 67%, p = 0.02). The increase coincided with changes in curative treatment modalities, with a rise in the proportion of patients managed endoscopically (18% to 34%, p=0.007), and a decline in use of surgery. Patients diagnosed with early cancer in 2013 were also significantly more likely to survive 1 year (98% vs 91%, p = 0.05).

**Conclusion:** Outcomes for patients diagnosed with early oesophageal adenocarcinomas have improved over the last five years. Over the same period, the proportion of patients managed with less invasive endoscopic treatment modalities has increased significantly.

**P155**

**Perioperative Zinc Deficiency in Oesophageal Cancer**

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**Background:** Zinc is a trace element with a role in important functions including immunity. Signs of zinc deficiency include poor wound healing, delayed recovery, diarrhoea, neuropsychiatry changes, poor appetite, taste and smell changes. Zinc deficiency is well-recognised after OG surgery however no data exists on perioperative zinc levels. The aim of this study was to investigate the prevalence of perioperative zinc deficiency.

**Methods:** A retrospective observational study was undertaken. Data on perioperative plasma serum zinc, weight, weight changes and height in 191 patients with OG cancer undergoing the surgical treatment pathway between January 2014 - April 2016 was collected and analysed according to stage of pathway (diagnosis, post neoadjuvant chemotherapy (NAC), 2 weeks post discharge after surgery).

**Results:** The mean (range) zinc level was 11umol/L (7-16-64umol/L) at diagnosis, 11umol/L (6-7-18-2umol/L) post NAC and 12umol/L (7-6-20-2umol/L) post-surgery. The mean range in the general population is 13-7-14-9umol. The prevalence of zinc deficiency was 54% (n = 76); 57% post neoadjuvant chemotherapy (n = 110); and 35% post-surgery (n = 147). Zinc deficiency was prevalent across the body mass index (BMI) categories: <19.9kg/m2 = 82% (n = 11); normal BMI range = 36% (n = 45); overweight = 69% (n = 55); obese = 63% (n = 49). Zinc deficiency was more prevalent in patients who were weight stable/<5% weight loss (42%; n = 59) compared with patients who lost >5% weight (26%; n = 72) deficiency. Pre- and post-supplementation levels were available for 16 patients. Zinc levels increased in all patients. Zinc deficiency was more prevalent in patients >65 years compared to those <65 years at diagnosis (58 versus 48%), post-NAC (58 versus 56%) and post-surgery (43 versus 23%).

**Conclusion:** Zinc deficiency is prevalent in patients with OG cancer undergoing surgery. Nutritional difficulties will be a causative factor, however it does not explain the prevalence in patients who are not deemed at nutritional risk based on weight loss and BMI. Further research is required on the causes of zinc deficiency in this patient group, the implications for outcomes and the effectiveness of supplementation. Screening for zinc deficiency should be considered in all patients not just those considered at nutritional risk.

**P156**

**A novel intra-gastric technique for excision of gastrointestinal tumours**

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**Background:** The choice of resection technique for gastrointestinal tumours (GIST) depends on size and location of the tumour. Stapled resection of tumours in the body of the stomach can be performed with a closed technique or following gastroscopy to deliver the tumour. However, in tumours adjacent to the gastrooesophageal junction (GOJ) or the pylorus it can be difficult to resect with adequate margins whilst still preserving function, and subtotal or proximal gastrectomy may be required. We demonstrate a novel intra-gastric technique to facilitate local resection of these tumours.

**Methods:** After establishing pneumoperitoneum the tumour is identified. One 10mm and two 5mm balloon ports are then inserted through the abdominal wall and into the body of the stomach. Inflation of the balloon secures the cannula within the stomach. The stomach is insufflated to 12mmHg with CO2. The tumour can then be directly visualised and resected using Harmonic scalpel. The defect and port site gastronomies are then sutured.

**Results:** This technique allows dissection of GISTs in difficult anatomical locations, as distention of the stomach stretches the stomach wall, creating the widest possible gap between the tumour and the GOJ or pylorus. Interestingly, insufflation of the stomach secures the cannula within the stomach. The stomach is insufflated to 12mmHg with CO2. The tumour can then be directly visualised and resected using Harmonic scalpel. The defect and port site gastronomies are then sutured.

**Conclusion:** We advocate this technique as a useful alternative to standard techniques for GIST resection, in particular when proximity to the pylorus or GOJ is difficult to assess.

**P157**

**High Resolution Manometry (HRM) and Barium Swallow - Marshmallow Motility Assessment (BSA-MMAS) in patients with GORD prior to Laparoscopic Anti-Reflux Surgery**

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**Background:** Patients with Gastro-oesophageal reflux disease (GORD) who are non-responsive to medical management with proton pump inhibitors are usually referred for anti-reflux surgery. Their preoperative assessment includes oesophageal physiological tests with high resolution manometry (HRM) and 24hr pH monitoring. These are invasive tests and some patients do not tolerate them well. Barium swallow marshmallow motility assessment (BSA-MMAS) is a non-invasive radiological test that provides reasonable information about oesophageal function.
P158
Endoscopic Management of Anastomotic Strictures and Delayed Gastric Emptying Post Oesophageo-Gastrectomy – A Comparison between Left Thoracoabdominal and Transhiatal Approaches

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Background: Postoperative strictures and delayed gastric emptying (DGE) are common symptoms following oesophageo-gastrectomy. While transhiatal oesophagectomy (THO) is associated with a higher rate anastomotic stricture compared to other approaches, our study compared the management of DGE by endoscopic pyloric dilatation in patients undergoing THO compared to a left thoracoabdominal approach (LTA) in our unit.

Methods: A retrospective analysis was performed of a prospectively maintained database of patients undergoing either LTA or THO resection of oesophageal cancer during a 37-month period (November 2011-December 2014). The numbers of postoperative upper GI endoscopy (OGD) and therapeutic dilatation of either anastomosis or pylorus were analysed. The follow up period was until 18th May 2015.

Results: There was a total of 53 LTA and 80 THO resections in the study period. Sixty seven percent of patients who underwent LTA resection underwent an UGI endoscopy in the follow up period compared to 66% of THO patients. The total number of endoscopies for the LTA patients was 92 compared to 166 for the THO patients. The mean patient age was 71 with 34 patients being men (65%) and 22 (35%) women. All resections were for gastric adenocarcinoma. The mean BMI of patients was 26 (range 19–30). 25 resections were TG, 22 ST, 8 PG, and 1 completion gastrectomy.

A further 10 LTA patients underwent 15 combined anastomotic and pyloric dilations versus 33 THO patients undergoing 54 combined procedures (p=0.02).

Conclusion: These results show a low threshold for, and high rate of therapeutic endoscopy after oesophageo-gastrectomy in our unit. Anastomotic stricture dilatation is more common after THO compared to LTA, however pyloric dilatation to improve symptoms of DGE is more common after a LTA approach. This study reinforces the need for further robust investigation into improved pyloric drainage strategies.

P159
A single-centre experience of laparoscopic gastrectomy for gastric cancer over a 5-year period
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Background: Laparoscopic gastrectomy for cancer has been reported to have comparable short term outcomes to open resections. We report the short term outcomes following laparoscopic total (TG), subtotal (ST) and partial gastrectomies (PG) for cancer of the stomach and GOJ performed by a single surgeon in a large volume centre over a 5-year period.

Methods: 56 patients who underwent laparoscopic TG, ST and PG from February 2011 to February 2016 were evaluated and further sub analysis performed according to operation type.

Results: The mean patient age was 71 with 34 patients being men (65%) and 22 (35%) women. All resections were for gastric adenocarcinoma. The mean BMI of patients was 26 (range 19–30). 25 resections were TG, 22 ST, 8 PG, and 1 completion gastrectomy.

The mean length of surgery was 4±7 hours (Range 03:30–07:12) for a TG, 04:14 (Range 02:55–06:15) for a ST, and 06:07 (Range 03:00–10:00) for a PG. Median length of stay was 8 days. The average lymph node yield was 27 for TG, 28 for ST and 28 for PG.

An intra-operative pneumothorax occurred in 3 patients. Three patients developed a LRTI.

Two patients returned to theatre; 1 for bleeding (originating from one of the small bowel staple lines) and the second for obstruction at the jejuno-jejunostomy which required revision. One patient required conversion due to bleeding from the splenic artery.

One patient had a positive proximal resection margin (TG, R1), whilst all other patients had a complete resection (R0).

Conclusion: The results of our single-surgeon retrospective analysis shows favourable short-term surgically-related and oncological outcomes comparable with other high volume centres in the western world (1). Additionally, the minimally invasive approach appears to have fewer wound and respiratory complications. The development of enhanced recovery protocols, surgeon and centre experiences and new minimally invasive techniques are likely to further improve outcomes for patients.

P160
Assessment of the operability of oesophago gastric cancers: Can we do better?
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Background: Patients with oesophagogastric cancer have a poor prognosis and those being considered for curative resection are staged through multiple radiological and endoscopic modalities. Despite this, a small proportion of patients are deemed unsuitable for resection at the time of planned surgery. The aim of this study was to quantify this patient group and its characteristics to see if there are any lessons to be learned in order to improve the accuracy of staging.
Methods: A retrospective analysis of a prospectively maintained database was undertaken at a regional tertiary referral unit for upper gastrointestinal cancer. All patients who were admitted between 2008 and 2015 for planned resection with curative intent, but did not undergo a resection were studied. Data were collected on patient demographics, staging modalities, oncological staging and the use of adjuvant therapy.

Results: Over this 8 year period, 689 patients were listed for intended curative resection. Of these, 46 (6.7%) cases were deemed unsuitable for radical resection at the time of surgery. 35 (76.1%) were male. The median age was 70-5 years. 17 (40.4%) cases were oesophageal, 14 (30.4%) were functional and 15 (32.6%) were gastric cancers. 40 (87.7%) were T2 or T3 tumours and 6 (13.3%) were T4. The median time between the last CT scan and the time of surgery was 51.5 days. Of the patients who had neoadjuvant chemotherapy 51.4% had a post treatment PET scan, with the remainder having a post treatment CT scan only. Resection was not undertaken due to metastatic disease in 62.0% of cases and due to locally advanced disease in 58.5%.

Conclusion: Multimodal staging appears to successfully predict suitability for resection for the majority of oesophagogastric cancers. Of the small proportion of patients who were deemed to be undersaged, a repeat PET CT scan in patients who underwent neoadjuvant treatment may have prevented an attempted resection.

P161

The use of questionnaires to survey UK-wide practice in the management of Achalasia

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Background: It is recommended that management of complex benign upper gastrointestinal pathology is discussed at MDTs. ACG guidelines further recommend that treatment delivery is provided by high volume centres, with objective post-procedural investigations, in order to improve patient outcomes. We aimed to survey the current UK practice in the management of achalasia.

Methods: Upper gastrointestinal (UGI) specialist surgeons throughout the UK were sent a surveymonkey.com questionnaire about the management of achalasia.

Results: 100 responses were received. The majority of patients with achalasia are referred directly to surgeons (80%) and only 15% of units have a multidisciplinary (MDT) meeting for discussing such patients. Diagnosis was mainly with OGD and contrast swallow, and only 61% of units have access to high resolution manometry (HRM). 89% of younger patients were offered surgery initially, whilst in the elderly surgery was offered as first line treatment in 55%. Partial fundoplication was carried out by 91% of responders as part of the operation, and 58% responders carry out an intraoperative OGD. The average number of operations carried out per annum is 4 per responder. Most responders (66%) did not perform routine post-intervention investigations and follow-up varied from none to lifelong.

Conclusion: Diagnosis and management of achalasia within the UK is relatively standardised, although there remains limited access to HRM. Discussion at benign MDTs however is poor and follow-up differs widely. UK guidelines may help to make these more uniform.

P162

Prediction of malignant progression of Barrett’s Oesophagus – A complete systematic review and Meta-analysis

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Background: Barrett’s Oesophagus (BO) is a precursor for Oesophageal Adenocarcinoma (OAC). Currently, there are no biomarkers predicting malignant progression in BO. We sought to clarify role of genetic aberrations as biomarkers through meta-analyses.

Methods: MEDLINE, EMBASE and Cochrane Library were searched for clinical studies assessing efficacy of p53, p16, Ki-67 and DNA content abnormalities. Main outcome measure was development of high grade dysplasia or OAC.

Results: 104 clinical studies, with 12,353 samples were identified. Mutation (Diagnostic Odd Ratio 10.91, sensitivity 47%, specificity 92%, Positive Likelihood Ratio 4.71, Negative Likelihood Ratio 0.65, Area Under Curve 0.79) and loss of p53 (DOR 16.16, sensitivity 31%, specificity 98%, PLR 6.66, NLR 0.41, AUC 0.923) were found to be superior to the other p53 abnormalities (Loss of heterozygosity – LOH, Over-expression). Ki-67 had high sensitivity in identifying high risk patients (DOR 3.54, sensitivity 82%, specificity 48%, PLR 1.59, NLR 0.42, AUC 0.7607). Aneuploidy (DOR 12.08, sensitivity 53%, specificity 87%, PLR 4.26, NLR 0.42, AUC 0.846), tetraploidy (DOR 5.87, sensitivity 46%, specificity 85%, PLR 3.47, NLR 0.65, AUC 0.793) and loss of Y chromosome (DOR 9.23, sensitivity 68%, specificity 80%, PLR 2.67, NLR 0.49, AUC 0.807) also predicted the malignant development with respectable accuracy but p16 aberrations (Hypermethylation, LOH, mutation and loss) failed to demonstrate any advantage over the other biomarkers studied.

Conclusion: Loss and mutation of p53 and Ki-67 effectively predict malignant progression in BO. A panel of biomarkers would be more suited for surveillance programme. This needs confirmation in large, prospective trials with cost-efficiency analyses.